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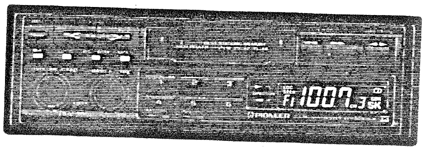
Service Manual



ORDER NO.
CRT 1158

CASSETTE CAR STEREO WITH FM/MW/LW ELECTRONIC TUNER

KEH-4090SDK WG
KEH-4090B EW
KEH-4090 EW

CASSETE CAR STEREO WITH FM/AM ELECTRONIC TUNER

Note:

- See the separate manual CX-166 (CRT1094) for the cassette mechanism description.
- Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

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1.SPECIFICATIONS

General

Power source	14.4 V DC (10.8 – 15.6 V allowable)
Grounding system	Negative type
Max. current consumption	7.0 A
Dimensions (chassis)	180(W) × 50(H) × 150(D) mm
(front face)	188(W) × 58(H) × 10(D) mm
Weight	1.4 kg

Amplifier

Maximum power output	25 W × 2/15 W × 4 (EIAJ)
Continuous power output	11 W × 2 (1% dist. at 1 kHz)
Load impedance	4 Ω (4 – 8 Ω allowable)
Tone controls (bass)	±10 dB (100 Hz)
(treble)	±10 dB (10 kHz)
Loudness contour	
(KEH-5090B)	+12 dB (100 Hz), +7 dB (10 kHz)
(KEH-4090B, KEH-4090)	+8 dB (100 Hz) (volume: –30 dB)

Tape player (KEH-5090B)

Tape	Compact cassette tape (C-30 – C-90)
Tape speed	4.76cm/sec. (+0.14cm/sec., –0.05cm/sec.)
Fast forward/rewind time	Approx. 100 sec. for C-60
Wow & flutter	0.13% (WRMS)
Frequency response	Metal: 50 – 17,000 Hz (±3 dB) Normal: 50 – 14,000 Hz (±3 dB)
Stereo separation	45 dB
Signal-to-noise ratio	Dolby NR IN: 60 dB (IEC-A network) Dolby NR OUT: 52 dB (IEC-A network)

Tape player (KEH-4090B, KEH-4090)

Tape	Compact cassette tape (C-30 – C-90)
Tape speed	4.8 cm/sec.
Fast forward/rewind time	Approx. 100 sec. for C-60
Wow & flutter	0.13% (WRMS)
Frequency response	50 – 14,000 Hz (±3 dB)
Stereo separation	45 dB
Signal-to-noise ratio	52 dB (IEC-A network)

FM tuner

Frequency range	87.5 – 108 MHz
Usable sensitivity	12 dBf (1.1 μV/75 Ω, mono)
50 dB quieting sensitivity	17 dBf (1.9 μV/75 Ω, mono)
Signal-to-noise ratio	70 dB (IEC-A network)
Distortion	0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response	50 – 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range	531 – 1,602 kHz
Usable sensitivity	18 μV (25 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

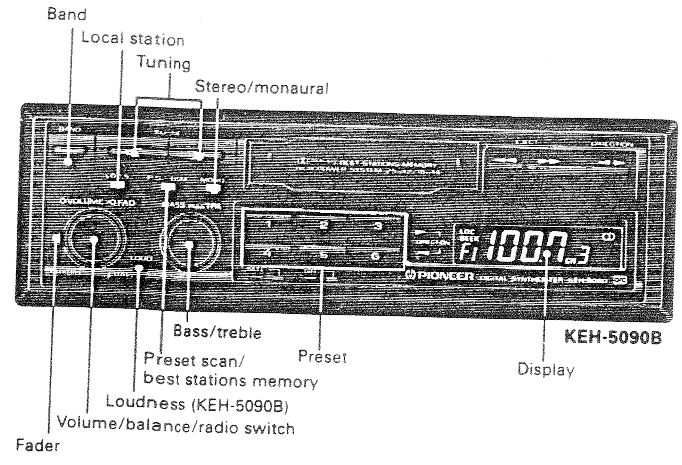
LW tuner

Frequency range	153 – 281 kHz
Usable sensitivity	30 μV (30 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

2.USING THE RADIO



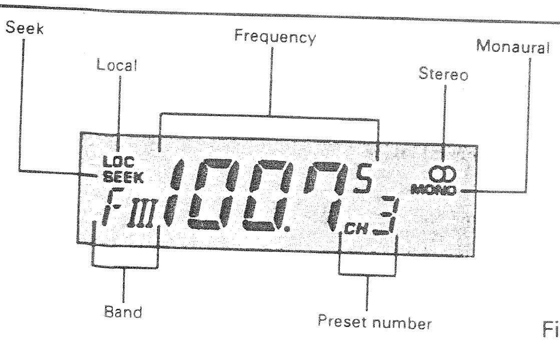


Fig. 1

● **Before attempting operation...**

- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the left horizontal.

1. Press the radio switch to turn on power and display the frequency.
2. Press the band switch to select the band.

● Switching between FM and MW/LW is controlled by the band switch. Switching between LW and MW is accomplished using the tuning button. The MW band is from 531 kHz to 1,602 kHz, and the LW band is from 153 kHz to 281 kHz.

3. Press both ends of tuning button and the seek tuning indicator will appear on the display.
4. Press either the left or right side of the tuning button to tune in the desired frequency. (Pressing the right side will increase the frequency.)
5. Adjust the volume and balance. To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
6. Adjust the tone to an appropriate level. To adjust the treble, pull the knob toward you and set it to the desired level.

● **To enter a frequency into the preset memory...**

7. Hold down one of the preset buttons (1-6) for approximately two seconds. The frequency is stored in memory (assigned to the preset button pressed) once the preset number stops flashing on the display.
   Six FM1 frequencies, six FM2 frequencies, six FM3 frequencies and six MW and LW frequencies can be entered.

- **Best Stations Memory Button**

Automatically tunes strong frequencies and assigns them to preset buttons 1 through 6 for one-touch automatic tuning. The best stations memory function is activated by pressing this button for approximately 2 seconds. The best stations memory function is indicated by ——— flashing on the display, and this function can be canceled by pressing the band switch. The frequency display returns once the best stations memory function is complete. The frequency displayed at this time is of the strongest station assigned to preset button 1 by the best stations memory function.

- 6 best (strongest) frequencies are momorized in the 6 preset buttons in the order of their strength, the strongest one being assigned to preset button 1.
- The frequencies previously assigned to the preset buttons are retained when 6 frequencies cannot be located.
- The best stations memory is in operation while ——— is flashing on the display.

- **Stereo/Monaural Switch**

This switch is used to change from stereo to monaural for FM broadcasts, and is usually left in the stereo position. When a stereo broadcast is received, the stereo indicator will illuminate. With the "Automatic Reception Control" (ARC) function, stereo broadcasts can always be enjoyed in their optimal reception mode. If excessive noise is present, pressing this switch allows monaural reception of the broadcast.

- **Local Station Switch**

Pressing this switch increases the seek threshold level so that only relatively strong stations can be tuned in (local indicator will illuminate on the display). Local seek threshold level can be selected among four levels for FM and two levels for MW and LW.
Holding this switch down for approximately 2 seconds and then pressing the right side of the tuning button changes the display form L-1, L-2, L-3 to L-4. Pressing the left side of the tuning button changes the display from L-4, L-3, L-2 to L-1. (L-1 and L-2 for MW/LW). The bigger the number, the higher the seek threshold becomes and only relatively strong stations can be tuned in.

- **Fader Control**

This control is used to adjust the balance between the front and rear speakers when using a 4-speaker system. Turning the control upwards decreases the volume of the rear speakers, while turning it downwards decreases the volume of the front speakers. With 2-speaker systems, set this control to a horizontal position.

- **Loudness Switch (KEH-5090B)**

When playing back a tape or listening to the radio at low volume, the low and high tones are emphasized and more clearly heard by pressing this switch.

- **Auto-Loudness (KEH-4090B, KEH-4090)**

When playing back a tape or listening to the radio at low volume, the low tone is automatically emphasized.

Seek Tuning

Press both ends of tuning button and tuning to the next higher or lower broadcast on the band can be accomplished automatically by simply pressing either the right or left side of the tuning button. FM frequencies change in 50 kHz steps while those in the MW and LW bands change in 9 kHz steps.

Preset Scan Tuning

Pressing the preset scan button (CH indicator flashes) causes previously stored frequencies to be tuned in sequentially for eight seconds each. Press again when the desired frequency is tuned in to cancel preset scan tuning.

Preset Tuning

Pressing the preset button instantly tunes in the frequency programmed in the memory for that button.

Manual Tuning

When manual tuning is employed, FM frequencies change in 50 kHz steps, LW frequencies change in 1 kHz steps, and MW frequencies change in 9 kHz steps.

1. Press both ends of tuning button and the seek tuning indicator will disappear from the display.
2. Change the frequency by pressing either the left or right side of the tuning button. Pressing the button once will change the frequency one step (see above). Continuously depressing either side of the button will successively change the frequency at the prescribed step.

- **Note on LW Band Seek Tuning**

The following shows changes in LW BAND broadcast frequency steps enacted by WARC/1979. The underlined italic figures indicate changes.

A. Up to January 1986
155-164-173-182-191-200-209-218-227-236-245-254-263-272-281
B. From February 1986
153-162-171-180-189-200-209-218-227-236-245-254-263-272-281
C. From February 1988
153-162-171-180-189-*198-207-216-225-234*-245-254-263-272-281
D. From February 1990
153-162-171-180-189-198-207-216-225-234-*243-252-261-270-279*

The LW BAND SEEK operations of this unit are performed in 9 kHz steps starting from 155 kHz. In the case of B, the change results in the first five frequencies being shifted (2 kHz each) from A, while the remaining ten are identical to those of A. Consequently, manual tuning (in 1 kHz steps) and seek tuning should be used together to tune in the desired LW broadcast. It is also suggested that your favorite LW stations will be memorized for instant recall.

3.USING THE TAPE DECK

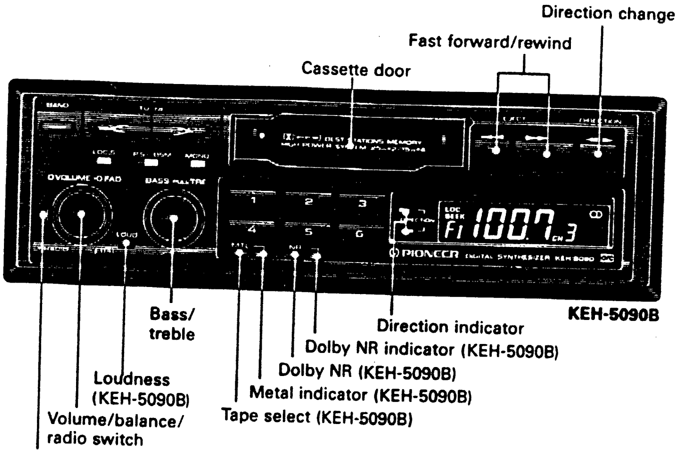


Fig. 2

● Before attempting operation...

- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the left horizontal.

1. Insert a tape into the deck to turn the power on and automatically begin playback. Even if the radio is on, the unit will automatically switch to and begin tape playback.
2. Adjust the volume and balance. To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
3. Adjust the tone to an appropriate level. To adjust the treble, pull the knob toward you and set it to the desired level.
4. When tape playback reaches the end of the tape, playback will automatically switch from the side being played to the opposite side (ie. Side A to Side B or vice versa) (Auto-reverse). To eject the tape during playback, simultaneously press the fast forward and rewind buttons.

- A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.
- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.
- Be sure to eject the tape when the vehicle's ignition is turned OFF. Leaving the tape in the unit can deform the pinch roller causing wow and flutter during tape playback.

● Fast Forward/Rewind

Since the transport can be in either direction, both the left and right high-speed tape transport buttons can be regarded as fast forward/rewind buttons.

For fast forward, press the high-speed tape transport button that corresponds to the direction that is shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse).

For rewind, press the button that is opposite that of the direction shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

Fast forward and rewind can be terminated by pressing the respective opposite high-speed tape transport button.

● Direction Change Button

This button is used to switch from one side of the tape to the other (from Side A to Side B or vice versa).

● Dolby NR Switch (KEH-5090B)

Press when playing a tape recorded with Dolby NR.

● Tape Select Switch (KEH-5090B)

This switch is used to switch to the proper mode for the tape being used and should be depressed when using chrome or metal tapes.

4.DISASSEMBLY

• Case Unit

1. Insert and turn a flat screwdriver to remove case.
2. Remove a screw.
3. Raise case unit to remove.

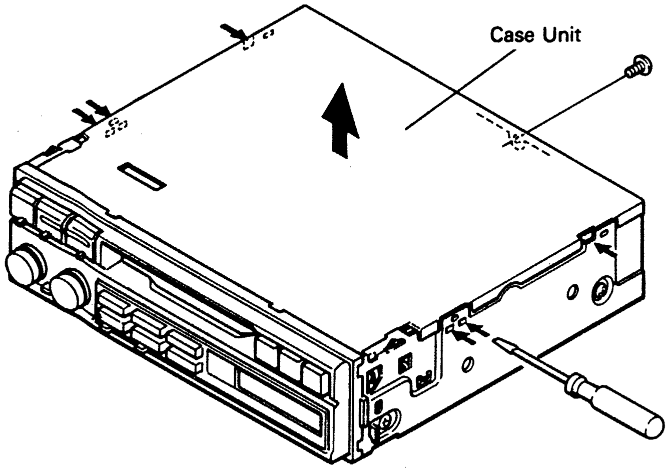


Fig. 3

• Grille assy

1. Remove three knobs.
2. Press tabs at three locations indicated by arrows, and pull out grille assy.

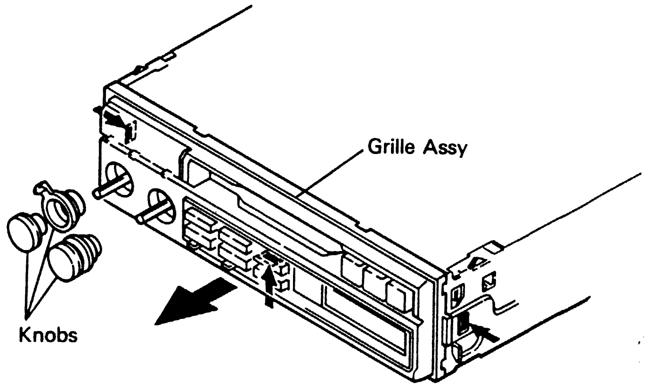

Grille Assy
Knobs

Fig. 5

• Handle Unit (KEH-5090SDK, 5090B, 5090QR, 4090B)

1. Rōmove two screws.
2. Remove stoppers of panel at four locations indicated by arrows, and pull out handle unit.

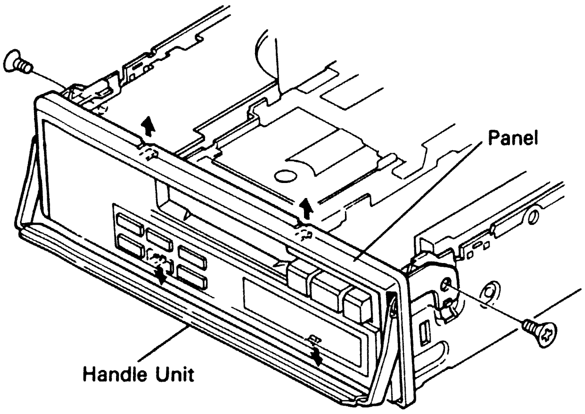

Panel
Handle Unit

Fig. 4

• Cassette mechanism assy

1. Disconnect two connectors.
2. Remove four screws, and then remove cassette mechanism assy.

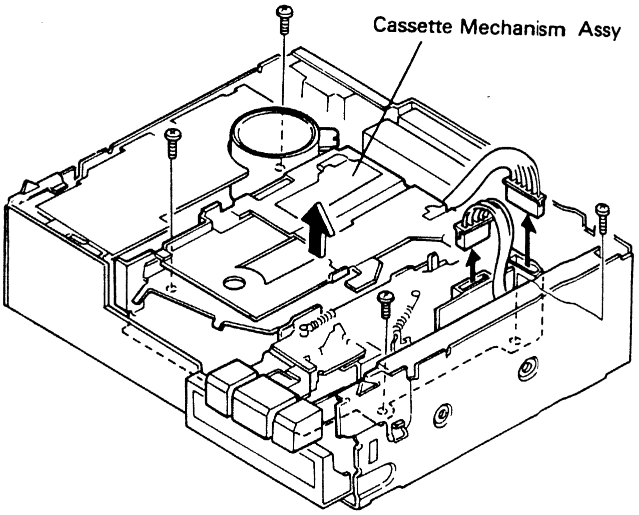

Cassette Mechanism Assy

Fig. 6

• Chassis unit (Except for KE-4070)

1. Remove two screws A, a screw B and four screws C.
2. Unbend tab at location indicated by arrow.
3. Raise up on tuner amp unit to remove it from chassis unit. At this time, disconnect cord from chassis unit.

Note:

When replacing the cord assy after it has been removed, apply some paint to screw after screwing it in to prevent it from loosening.

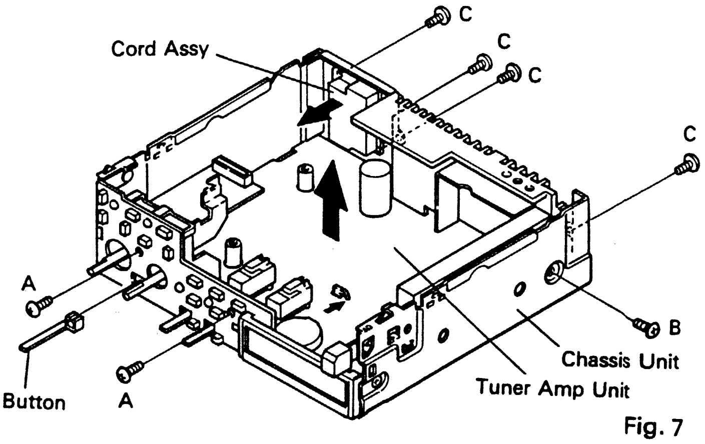

C
C
C
Cord Assy
C
A
B
Chassis Unit
Tuner Amp Unit
Button
A

Fig. 7

• Chassis unit (KEH-4070)

1. Remove six screws A and a screw B.
2. Raise up on tuner amp unit to remove it from chassis unit.

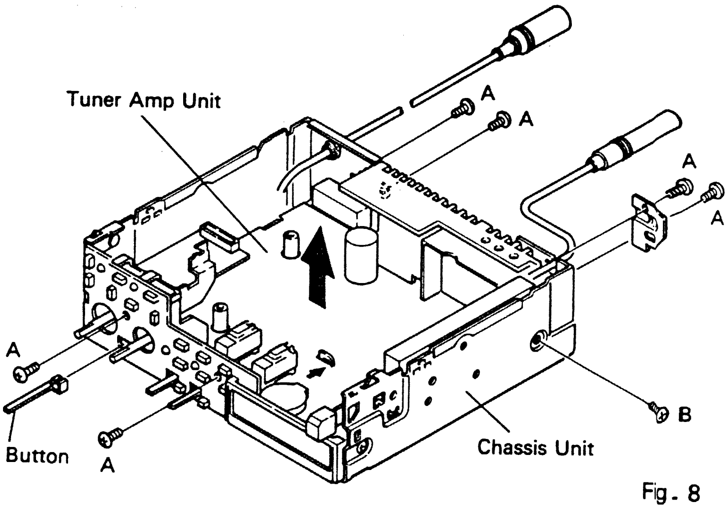

Tuner Amp Unit
A
A
A
A
A
A
B
Chassis Unit
Button
A

Fig. 8

• Heat Sink

1. Remove a plate.
2. Remove two screws.
3. Remove a heat sink.

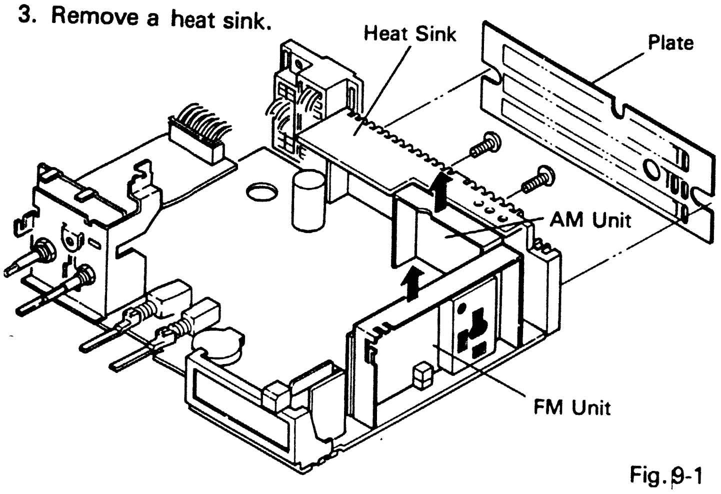

Heat Sink
Plate
AM Unit
FM Unit

Fig. 9-1

• FM unit/AM unit (Fig 9-2)

1. Remove solder at location indicated by arrows.
2. Remove solders and unbend tabs on back of each unit straight.
3. Pull out unit as shown in Fig. 9-1

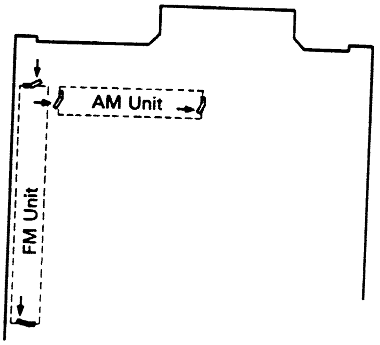

AM Unit
FM Unit

Fig. 9-2

5.BLOCK DIAGRAM

- KEH-5090SDK

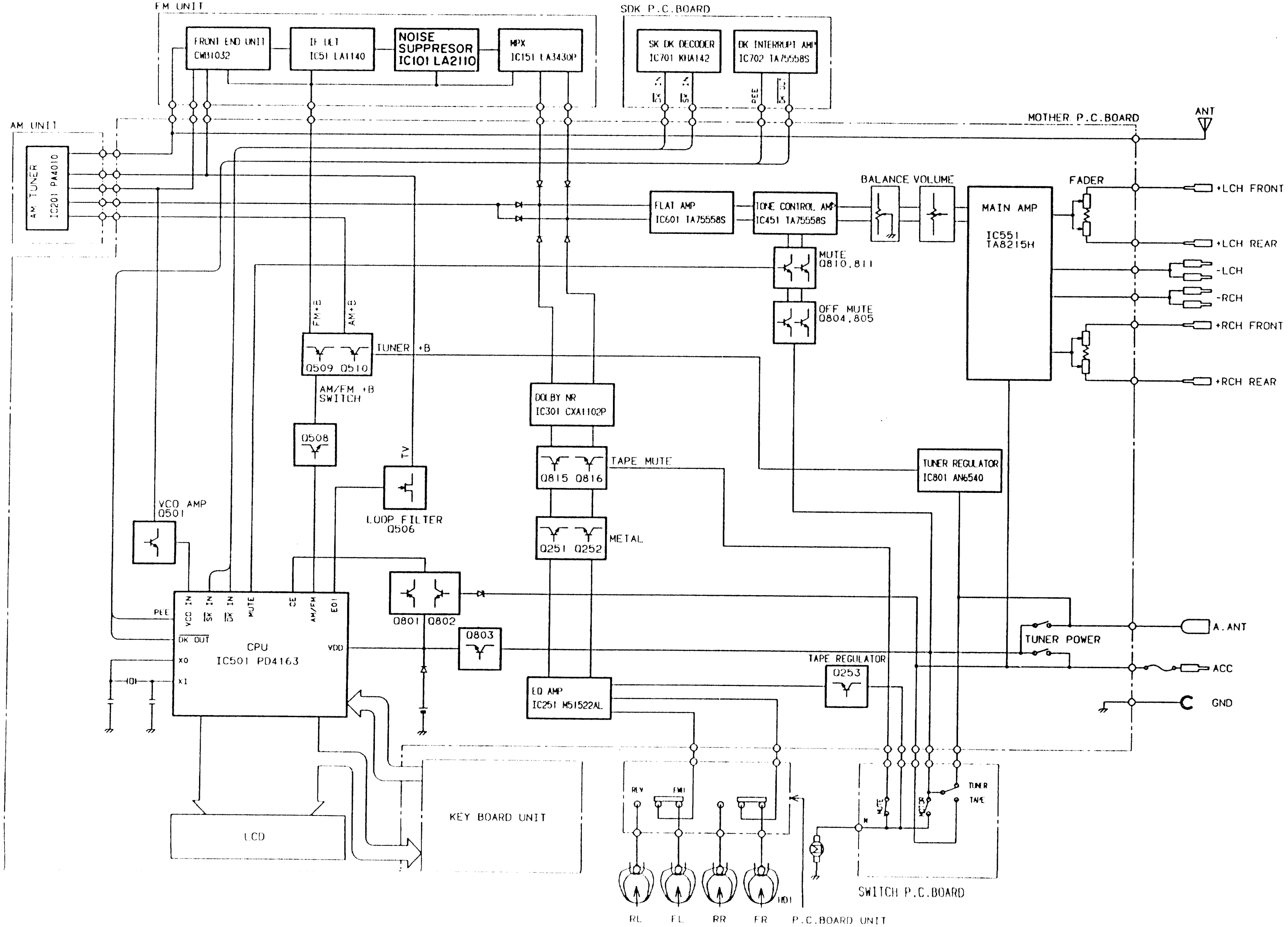

FM UNIT
FRONT END UNIT
CWB1032
IF ULT
IC51 LA1140
NOISE SUPPRESOR
IC101 LA2110
MPX
IC151 LA3430P
SDK P.C.BOARD
SK DK DECODER
IC701 KHA142
DK INTERRUPT AMP
IC702 TA75558S
PEE
MOTHER P.C.BOARD
ANT
AM UNIT
AM TUNER
IC201 PA4010
BALANCE VOLUME
FADER
FLAT AMP
IC601 TA75558S
TONE CONTROL AMP
IC451 TA75558S
MAIN AMP
IC551
TA8215H
+LCH FRONT
+LCH REAR
-LCH
-RCH
+RCH FRONT
+RCH REAR
MUTE
Q810,811
OFF MUTE
Q804,805
FM+B
AM+B
TUNER +B
Q509 Q510
AM/FM +B
SWITCH
Q508
TV
LOOP FILTER
Q506
DOLBY NR
IC301 CXA1102P
TAPE MUTE
Q815 Q816
METAL
Q251 Q252
TUNER REGULATOR
IC801 AN6540
VCO AMP
Q501
PEE
VCO IN
SK IN
DK IN
MUTE
CE
AM/FM
EO1
DK OUT
CPU
IC501 PD4163
XO
X1
VDD
Q801 Q802
Q803
A.ANT
TUNER POWER
ACC
GND
TAPE REGULATOR
Q253
EQ AMP
IC251 M51522AL
LCD
KEY BOARD UNIT
REV
FWD
MUTE
TUNER
TAPE
H01
RL
FL
RR
FR
P.C.BOARD UNIT
SWITCH P.C.BOARD

Fig. 10

7.ADJUSTMENT

• Connection Diagram

NOTICE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

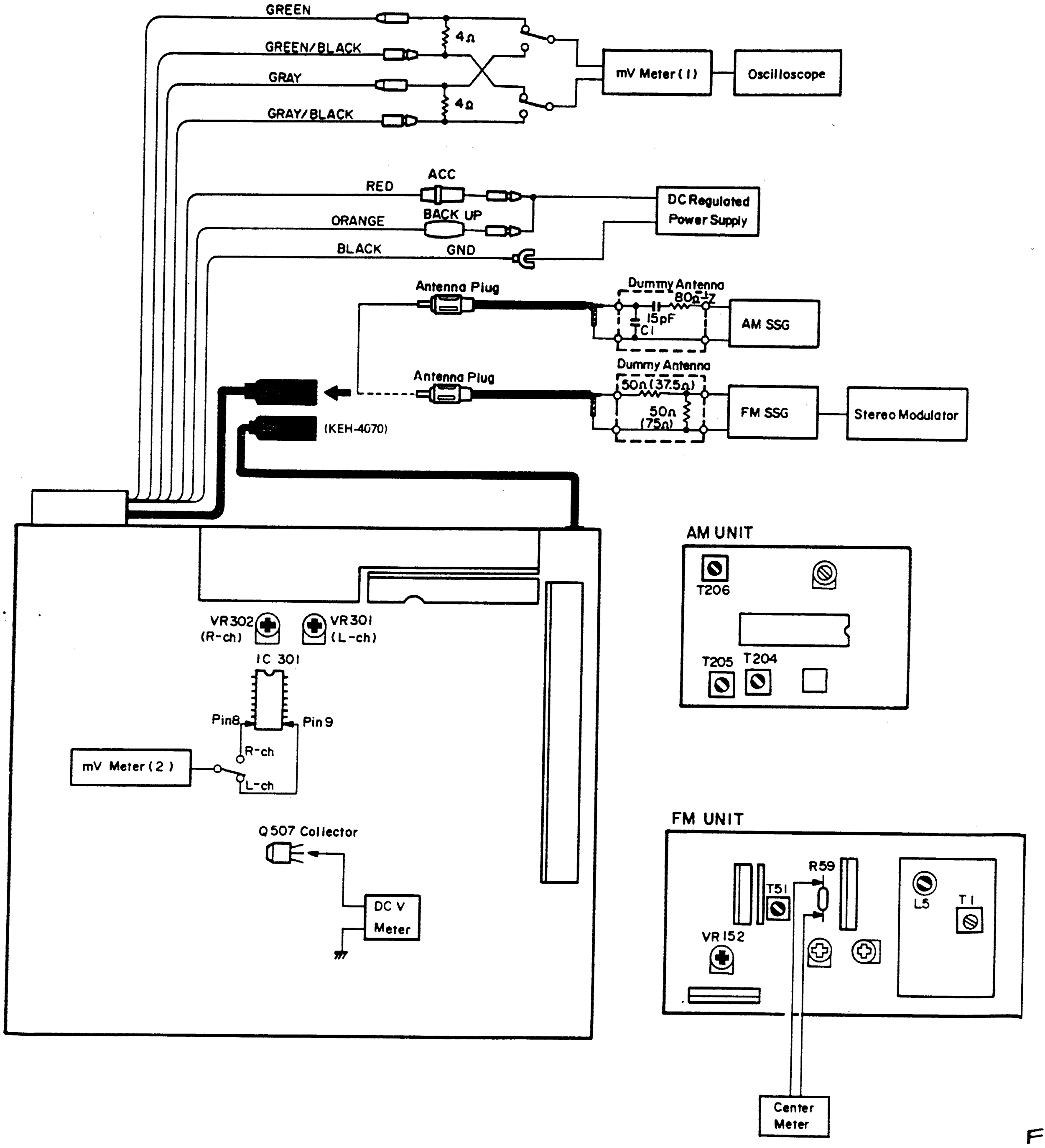

GREEN
GREEN/BLACK
GRAY
GRAY/BLACK
4Ω
4Ω
mV Meter (1)
Oscilloscope
RED
ACC
ORANGE
BACK UP
BLACK
GND
DC Regulated Power Supply
Antenna Plug
Dummy Antenna
80Ω-Z
15pF
C1
AM SSG
Antenna Plug
Dummy Antenna
50Ω(37.5Ω)
50Ω
(75Ω)
FM SSG
Stereo Modulator
(KEH-4070)
VR302 (R-ch)
VR301 (L-ch)
IC 301
Pin8
Pin9
R-ch
L-ch
mV Meter (2)
Q507 Collector
DC V Meter
AM UNIT
T206
T205
T204
FM UNIT
R59
T51
VR152
L5
T1
Center Meter

Fig. 13

6.CONNECTION

Note:

- To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.
- Replace fuses only with the types stipulated on the fuse holder.
- Be sure to properly connect the color coded leads. Failure to do so can cause malfunctions.
- Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.
- Speakers connected to this unit must be high-power type possessing maximum input of at least 25 W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.

2-speaker system

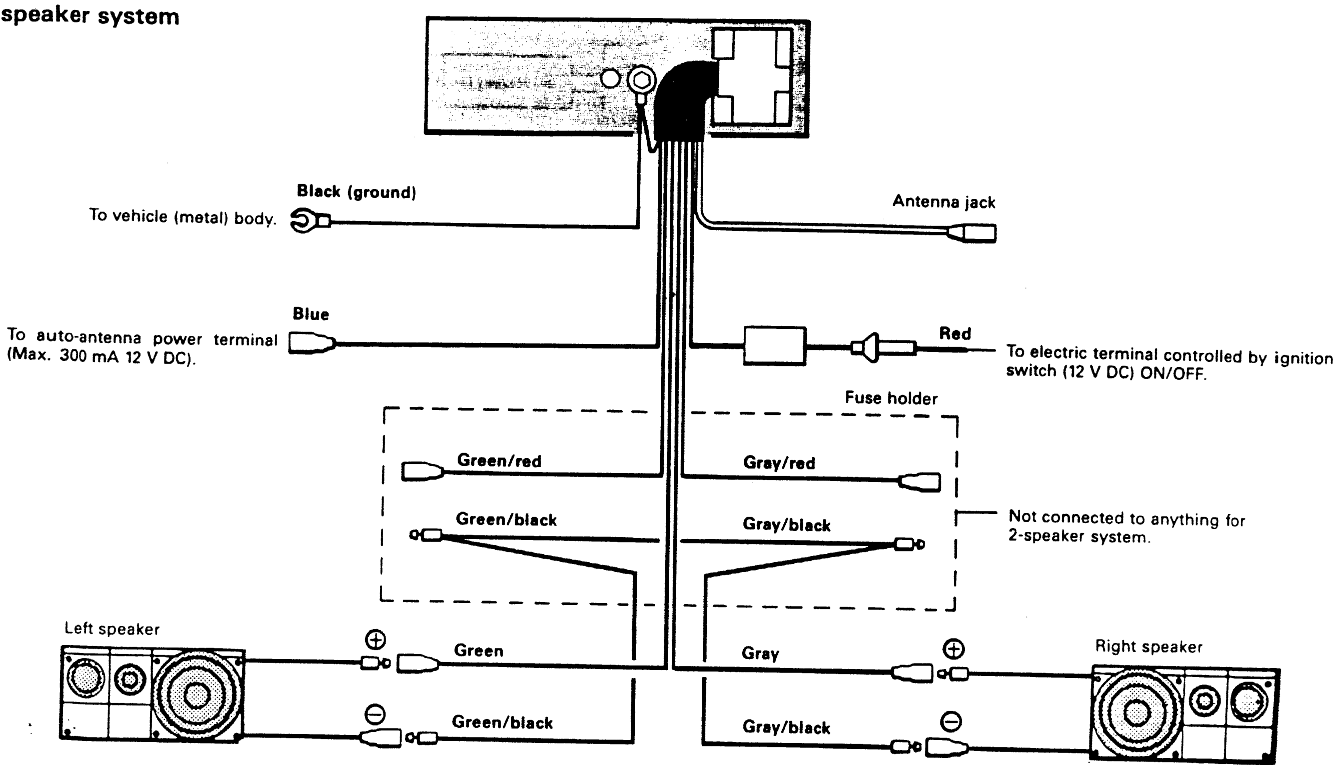

Black (ground)
To vehicle (metal) body.
Antenna jack
Blue
To auto-antenna power terminal (Max. 300 mA 12 V DC).
Red
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
Fuse holder
Green/red
Gray/red
Green/black
Gray/black
Not connected to anything for 2-speaker system.
Left speaker
⊕
Green
Gray
⊕
Right speaker
⊖
Green/black
Gray/black
⊖

Fig. 11

4-speaker system

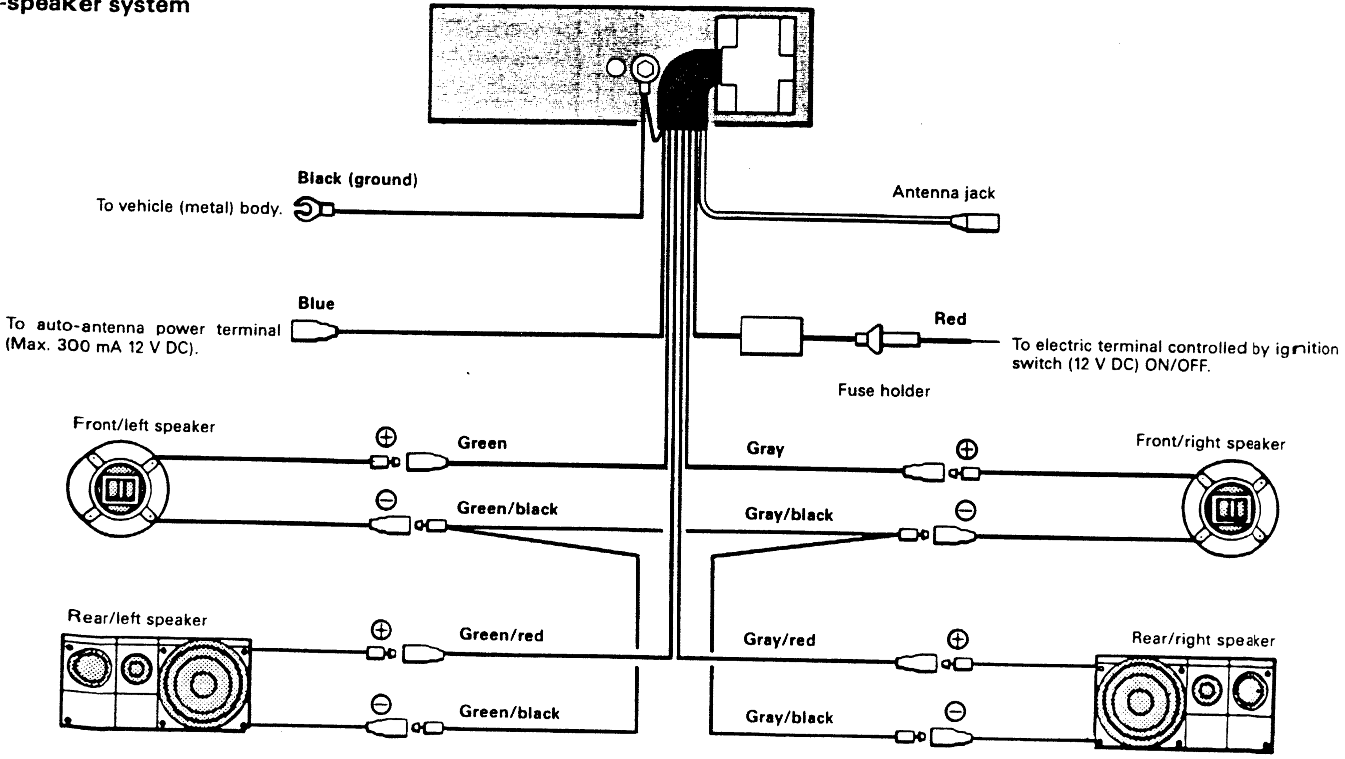

Black (ground)
To vehicle (metal) body.
Antenna jack
Blue
To auto-antenna power terminal (Max. 300 mA 12 V DC).
Red
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
Fuse holder
Front/left speaker
⊕
Green
Gray
⊕
Front/right speaker
⊖
Green/black
Gray/black
⊖
Rear/left speaker
⊕
Green/red
Gray/red
⊕
Rear/right speaker
⊖
Green/black
Gray/black
⊖

Fig. 12

7. 1 MW/LW ADJUSTMENT (WG, EW)

	No.	AM SSG(400Hz,30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(kHz)	Level(dB)			
Tuning Volt	1	(MW MODE)		1,602	—	Verify that DC V Meter is less than 6.5V
	2	(LW MODE)		153	—	Verify that DC V Meter is more than 2.0V
IF	1	999	20-25	999	T204,205, 206	mV Meter(1):Maximum

7. 2 AM ADJUSTMENT (ES)

*:When tuning step at 10kHz.

	No.	AM SSG(400Hz,30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(kHz)	Level(dB)			
Tuning Volt	1			1,602 *(1,620)	—	Verify that DC V MeterV is less than 6.5V
	2			531 *(530)	—	Verify that DC V Meter is more than 2.0V
IF	1	999 *(1,000)	20-25	999 *(1,000)	T204,205, 206	mV Meter(1):Maximum

7. 3 FM ADJUSTMENT

※ Stereo MOD.: 1kHz,L+R=90% , Pilot=10%

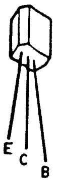
	No.	FM SSG(400Hz,100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dB)			
IF	1	98.1 Unmodulated	60	98.1	T51	Center Meter:0
Front End	1			108.0	L5	DC V Meter:7.4V
	2			87.5	—	Verify that DC V Meter is more than 0.7V
	3	98.1	5-10	98.1	T1	mV Meter(1):Maximum
ARC	1	98.1※	35	98.1	VR152	mV Meter(1):Separation 5dB

7. 4 DOLBY NR ADJUSTMENT (5090SDK, 5090B, 5070QR)

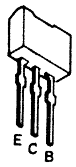
No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150(400Hz,200nwb/m)	VR301(Lch)VR302(Rch)	mV Meter(2):-10dBs±1dB (DOLBY NR Switch:OFF) (METAL Switch:OFF)

• IC s and Transistors

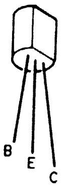
2SA 1048
2SA 1150
2SC 1740S
2SC 2458
2SC 3113



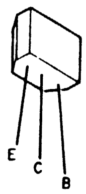
2SB 1243
2SD 1919
2SD 1864



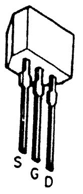
2SC 2498



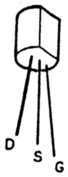
2SD 1468S



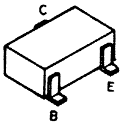
2SK 330



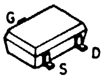
2SK 435



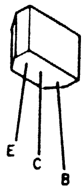
2SA 1162
2SA 1179
2SC 2712
2SD 601



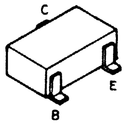
2SJ 106



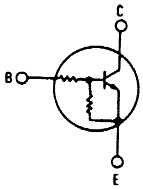
DTC 124 ES
DTC 144 ES
DTC 314 TS



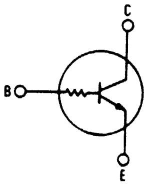
DTC 124 EK



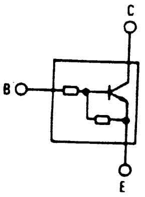
DTC 124 ES
DTC 144 ES



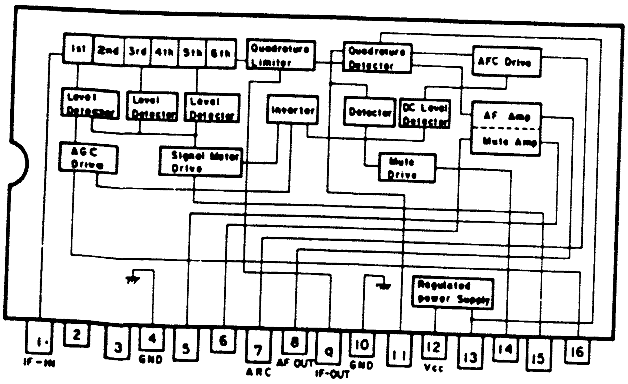
DTC 314 TS



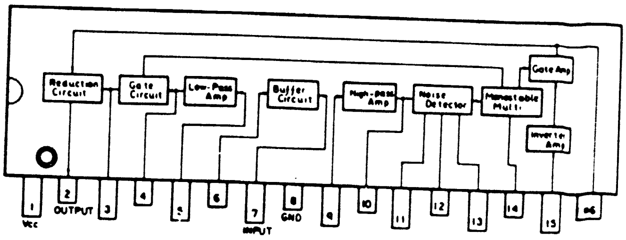
DTC 124 EK



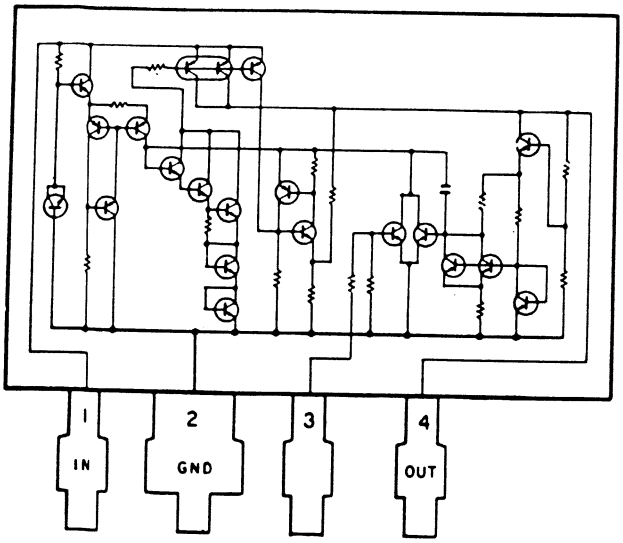
LA1140B


1st
2nd
3rd
4th
5th
6th
Quadrature Limiter
Quadrature Detector
AFC Drive
Level Detector
Level Detector
Level Detector
Inverter
Detector
DC Level Detector
AF Amp
Mute Amp
AGC Drive
Signal Meter Drive
Mute Drive
Regulated power Supply
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
IF-IN
GND
ARC
AF OUT
IF-OUT
GND
Vcc

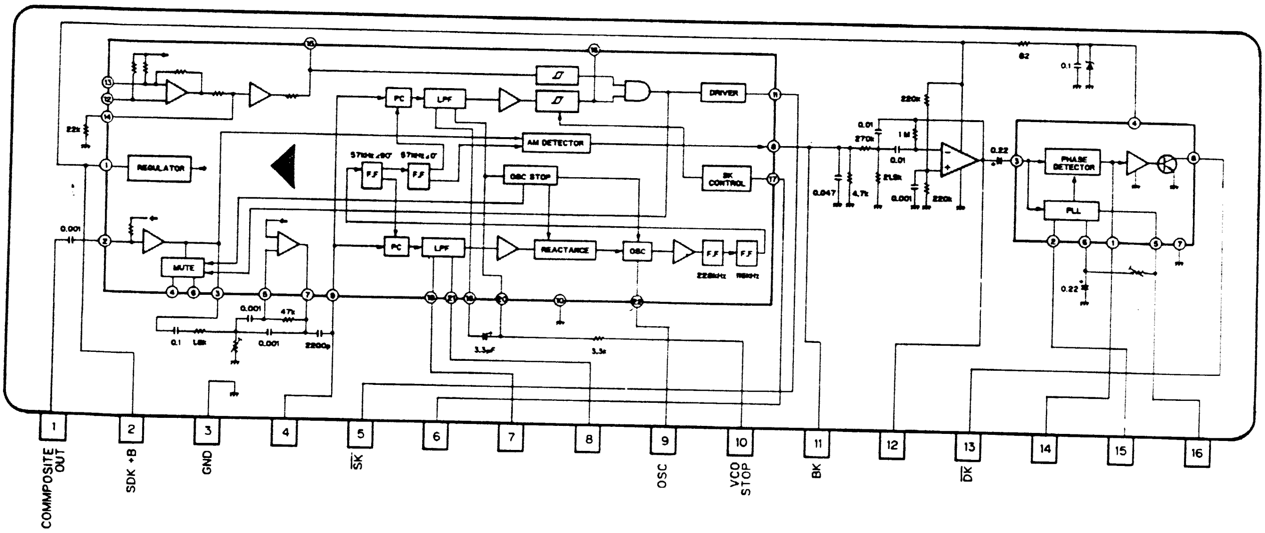
LA2110


Reduction Circuit
Gate Circuit
Low-Pass Amp
Buffer Circuit
High-pass Amp
Noise Detector
Monostable Multi
Gate Amp
Inverter Amp
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Vcc
OUTPUT
INPUT
GND

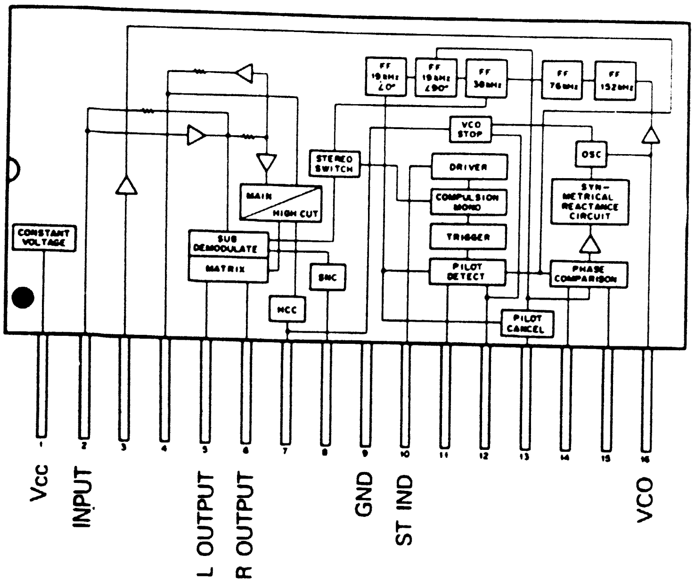
AN6540


1
IN
2
GND
3
4
OUT

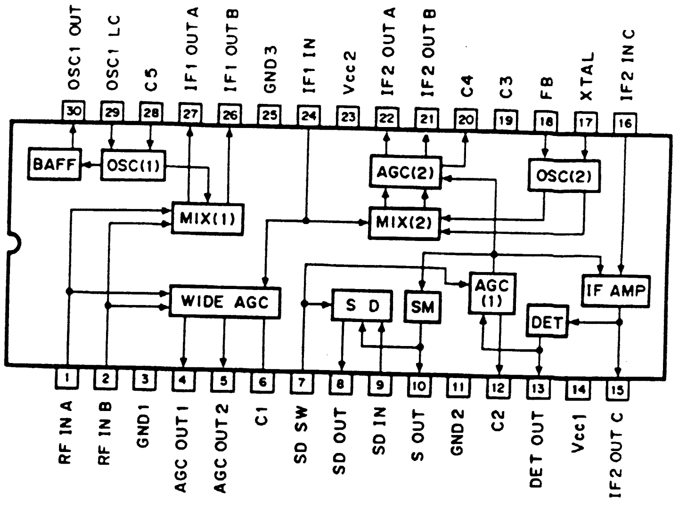
KHA142


REGULATOR
MUTE
PC
LPF
AM DETECTOR
57kHz ∠90°
57kHz ∠0°
F.F
OSC STOP
REACTANCE
OSC
228kHz
114kHz
DRIVER
SK CONTROL
22k
0.001
0.1
1.8k
0.001
47k
0.001
2200p
3.3μF
3.3k
82
0.1
220k
0.01
270k
1M
0.01
21.8k
0.047
4.7k
0.001
220k
0.22
PHASE DETECTOR
PLL
0.22
1
COMMPOSITE OUT
2
SDK +B
3
GND
4
5
$\overline{SK}$
6
7
8
9
OSC
10
VCO STOP
11
BK
12
13
$\overline{DK}$
14
15
16

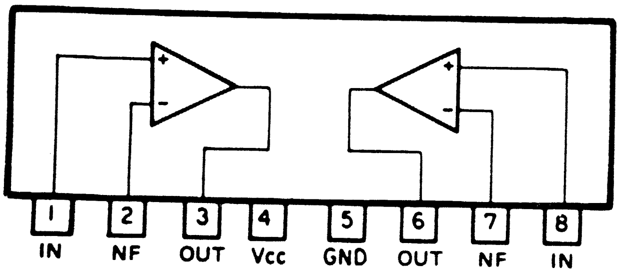
LA3430P


CONSTANT VOLTAGE
MAIN
HIGH CUT
SUB DEMODULATE
MATRIX
STEREO SWITCH
MCC
SNC
FF 19kHz ∠0°
FF 19kHz ∠90°
FF 38kHz
FF 76kHz
FF 152kHz
VCO STOP
DRIVER
COMPULSION MONO
TRIGGER
PILOT DETECT
PILOT CANCEL
OSC
SYN-METRICAL REACTANCE CIRCUIT
PHASE COMPARISON
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Vcc
INPUT
L OUTPUT
R OUTPUT
GND
ST IND
VCO

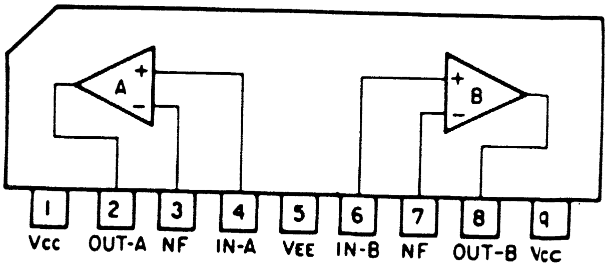
PA4010


OSC1 OUT
OSC1 LC
C5
IF1 OUT A
IF1 OUT B
GND3
IF1 IN
Vcc2
IF2 OUT A
IF2 OUT B
C4
C3
FB
XTAL
IF2 IN C
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
BAFF
OSC(1)
MIX(1)
AGC(2)
MIX(2)
OSC(2)
WIDE AGC
S D
SM
AGC (1)
DET
IF AMP
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
RF IN A
RF IN B
GND1
AGC OUT 1
AGC OUT 2
C1
SD SW
SD OUT
SD IN
S OUT
GND 2
C2
DET OUT
Vcc1
IF2 OUT C

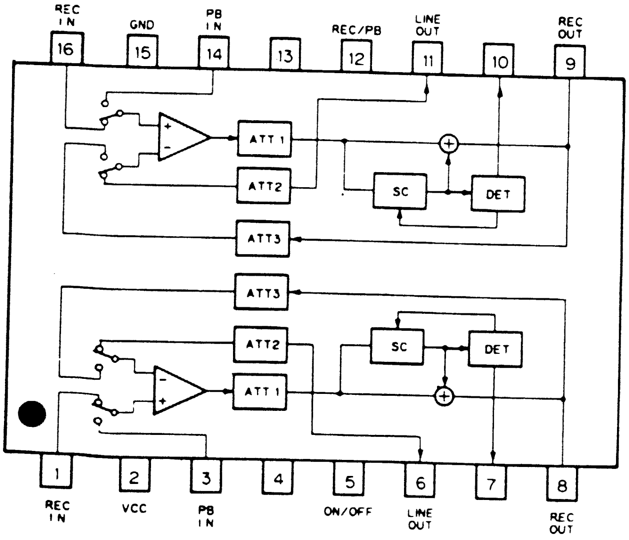
M51522AL


+
-
+
-
1
2
3
4
5
6
7
8
IN
NF
OUT
Vcc
GND
OUT
NF
IN

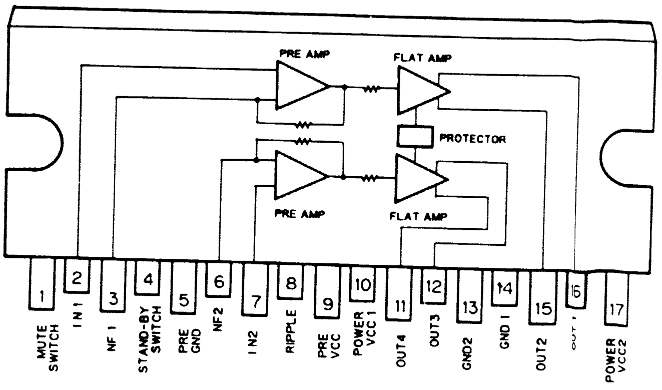
TA75558S


A
+
-
B
+
-
1
2
3
4
5
6
7
8
9
Vcc
OUT-A
NF
IN-A
VEE
IN-B
NF
OUT-B
Vcc

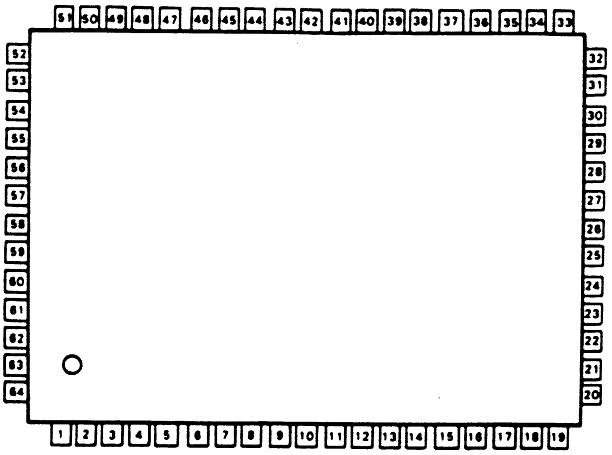
CXA1102P


REC IN
GND
PB IN
REC/PB
LINE OUT
REC OUT
16
15
14
13
12
11
10
9
+
-
ATT 1
ATT2
ATT3
SC
DET
ATT3
ATT2
ATT 1
SC
DET
-
+
1
2
3
4
5
6
7
8
REC IN
VCC
PB IN
ON/OFF
LINE OUT
REC OUT

TA8215H


PRE AMP
FLAT AMP
PROTECTOR
PRE AMP
FLAT AMP
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
MUTE SWITCH
IN1
NF 1
STAND-BY SWITCH
PRE GND
NF2
IN2
RIPPLE
PRE VCC
POWER VCC1
OUT4
OUT3
GND2
GND 1
OUT2
OUT1
POWER VCC2

*PD4163



*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

●Pin Functions

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Function and Operation</th></tr>
<tr><td>1</td><td>NC</td><td>–</td><td>No. connected to internal chips.</td></tr>
<tr><td>2
3</td><td>EO1
EO2</td><td>Output
CMOS
3 state</td><td>Pll error output. H level output by these terminals when division of local oscillator frequency (VCO output) is higher than reference frequency. L level output when lower. This output is applied to a varactor diode, via an external low pass filter. EO1 and EO2 output identical waveforms.</td></tr>
<tr><td>4
8</td><td>GND
GND</td><td>–
–</td><td>GND terminal</td></tr>
<tr><td>5</td><td>AM IN</td><td></td><td>Not used.</td></tr>
<tr><td>6</td><td>VCO IN</td><td>Input</td><td>AM: Inputs 0.6 – 15 MHz (0.3 Vp-p MIN) local oscillator reference frequency (VCO output). This terminal is active when direct division system is selected.
FM: Inputs 15 – 150 MHz (0.5 Vp-p MIN) local oscillator reference frequency (VCO output). This terminal is active when swallow counter method is selected.</td></tr>
<tr><td>7</td><td>CE</td><td>Input</td><td>Device signal input. H level during normal device operation, L level when device is not being used. PLL is in disable status while this terminal is L level. For models without clocks, internal clock and CPU operation is halted while this terminal is L level, and memory is maintained by low demand current (10 μA MAX). Change of CE terminal from L to H results in device reset and the program to start from address 0.</td></tr>
<tr><td>9

10</td><td>FM/AM

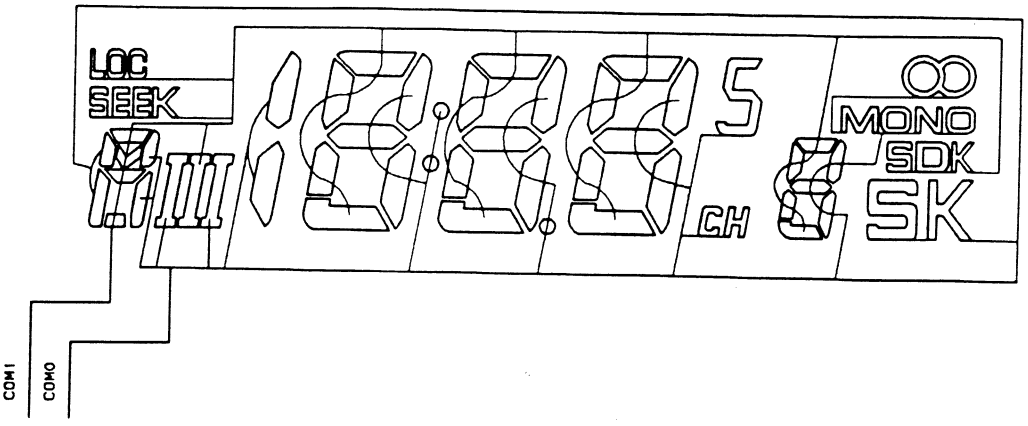
LW</td><td>Output

CMOS
Pushpull</td><td>Power supply switching output terminal from tuner. Output as illustrated in following table according to outputs of two terminals.
<table>
<tr><th>BAND / PIN</th><th>FM</th><th>MW</th><th>LW</th></tr>
<tr><td>FM/AM</td><td>H</td><td>L</td><td>L</td></tr>
<tr><td>LW</td><td>L</td><td>L</td><td>H</td></tr>
</table></td></tr>
<tr><td>11</td><td>MUTE</td><td>Output
CMOS
Pushpull</td><td>Mute output. Output for elimination of shock noise when PLL lock is released.
Active when high.</td></tr>
<tr><td>12</td><td>$\overline{\text{DK}}$ IN</td><td>Input</td><td>Inputs message recognition signal (DK) sent during traffic information broadcasts only. Since the DK signal is sent by amplitude modulation of a 57 kHz subcarrier wave by 125 Hz, it counts the input signals in accordance with the program. A DX signal is judged as being preset when 125 Hz is not detected twice consecutively. DK signal is judged as not being preset when 125 Hz is not detected 4 times consecutively.
An interrupt operation is performed when a DK signal is judged as being present. This count is only performed in the SDK mode.</td></tr>
<tr><td>13</td><td>$\overline{\text{SK}}$ IN</td><td>Input</td><td>Determines whether traffic information is being broadcast and inputs a broadcast detect signal (SK). Broadcast is detected when input signal is L level, and "SK" indicator is displayed. Besides being used as the SDK mode auto tuning stop signal, SK input controls the SK mode and SK alarm functions.</td></tr>
</table>

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Function and Operation</th></tr>
<tr><td>14</td><td>$\overline{\text{ST}}$</td><td>Input</td><td>Inputs stereo broadcast detection signal. Stereo is detected when input signal is L level, and "ST" indicator is displayed. Display is cleared when input signal is at H level. "ST" indicator is OFF during mute signal output.</td></tr>
<tr><td>15</td><td>TAPE</td><td>Input</td><td>Tape signal input terminal. Since this terminal is A/D (analog/digital) input, 2.461 V and above is the H level tape mode.</td></tr>
<tr><td>16</td><td>IF</td><td>Input</td><td>MW, LW band center frequency input terminal.</td></tr>
<tr><td>17</td><td>SD</td><td>Input</td><td>Judges whether or not a broadcast is present during auto tuning. A broadcast is judged as being present when L level is input.</td></tr>
<tr><td>18</td><td>SI</td><td>Input</td><td>Not used</td></tr>
<tr><td>19
22</td><td>NC</td><td></td><td>Not used</td></tr>
<tr><td>23</td><td>$\overline{\text{SEEK}}$</td><td>Output
CMOS</td><td>"L" level: SEEK, BSM, BSA and PSCN</td></tr>
<tr><td>24
25</td><td>XO
XI</td><td>Input
CMOS</td><td>Quartz oscillator terminal connection terminal. 4.5 MHz quartz crystal used.</td></tr>
<tr><td>26
58</td><td>VDD
VDD</td><td></td><td>Device power supply terminal. 5V ± 10% voltage supplied.</td></tr>
<tr><td>27</td><td>PEE</td><td>Output
CMOS</td><td>Alarm output terminal. Alarm output when SK in SDK mode remains at H level continuously for more than 30 seconds.</td></tr>
<tr><td>28</td><td>MONO</td><td>Output
CMOS</td><td>Controlled by MONO key. L level for MONO, H level output for AUTO.</td></tr>
<tr><td>29</td><td>DK OUT</td><td></td><td>Controlled by DK IN (terminal # 12) input signal. L level output when DK IN input signal is detected as 125 Hz while SK IN (terminal # 13) input is L level. Since DK IN measurement operation is only performed in SDK mode, terminal is always H in SDK mode except under above noted conditions.</td></tr>
<tr><td>30
31</td><td>LOCH
LOCL</td><td>Output
CMOS</td><td>Halt sensitivity switching terminals controlled by LOC and BSM keys.
<table>
<tr><th></th><th>DX·SEEK (PSCN)</th><th>LOC·SEEK</th><th>BSM-L</th><th>BSM-M (AM)</th></tr>
<tr><td>LOCH</td><td>L</td><td>L</td><td>L</td><td>L</td></tr>
<tr><td>LOCL</td><td>L</td><td>H</td><td>L</td><td>H</td></tr>
</table>
<table>
<tr><th></th><th>BSM-H</th><th>During broadcast reception</th></tr>
<tr><td>LOCH</td><td>H</td><td>L</td></tr>
<tr><td>LOCL</td><td>H</td><td>L</td></tr>
</table></td></tr>
<tr><td>32
≀
55</td><td>LCD23
≀
LCD0</td><td>Output
CMOS</td><td>Segment signal output terminal to LCD. LCD display performed using COM0, COM1 matrices.</td></tr>
<tr><td>48
≀
55</td><td>KS7
≀
KS0</td><td>Output
CMOS</td><td>Key return signal source output terminal.</td></tr>
<tr><td>56
57</td><td>COM0
COM1</td><td>Output
CMOS</td><td>Common signal to LCD. GND, 1/2VDD, VDD values (5 ms interval) output at 100 Hz cycle. Segments between these terminals and LCD0 — LCD23 with ± VDD potential difference are lit.</td></tr>
<tr><td>59
≀
62</td><td>K3
≀
K0</td><td>Input</td><td>Key matrix input terminal.</td></tr>
<tr><td>63</td><td>S.L.</td><td>Input</td><td>Station level analog voltage input. Used for broadcast detection in MW, LW band auto tuning.</td></tr>
<tr><td>64</td><td>B.U.</td><td>Input</td><td>Back up voltage sense terminal.
"H" Level: Back up on</td></tr>
</table>

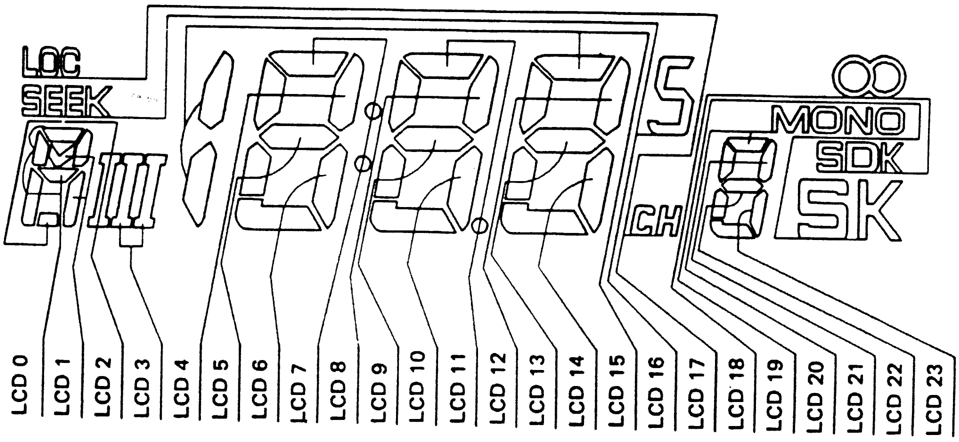
•LCD (CWW1216)

COMMON



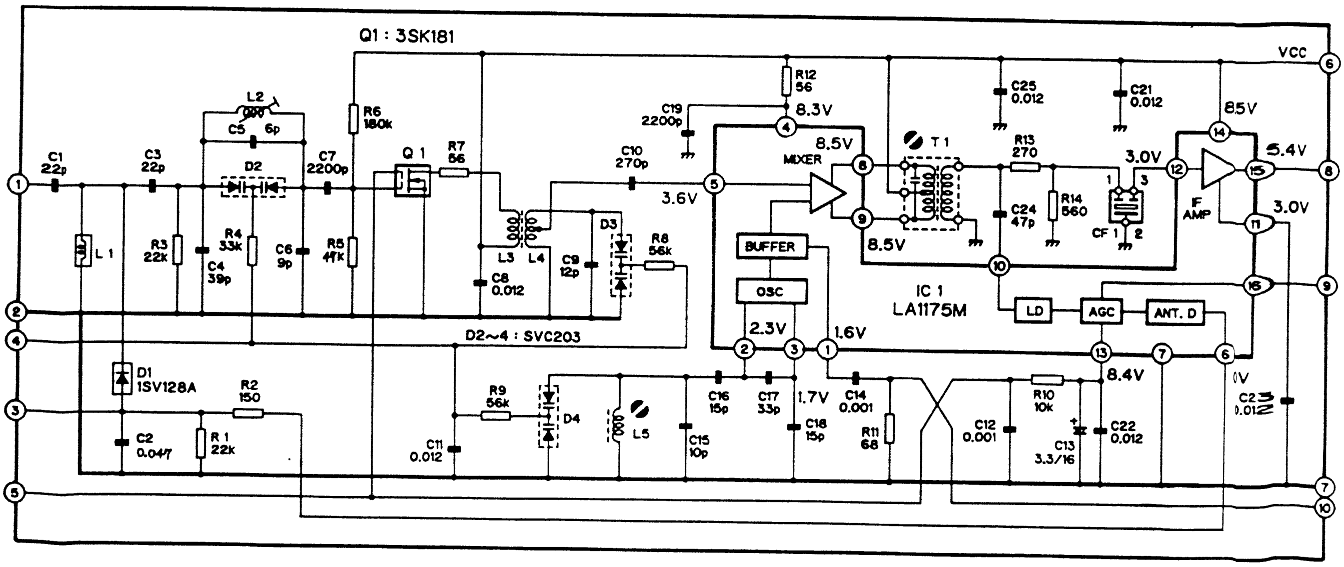
LOC
SEEK
MONO
SDK
SK
CH
COM1
COM0

SEGMENT



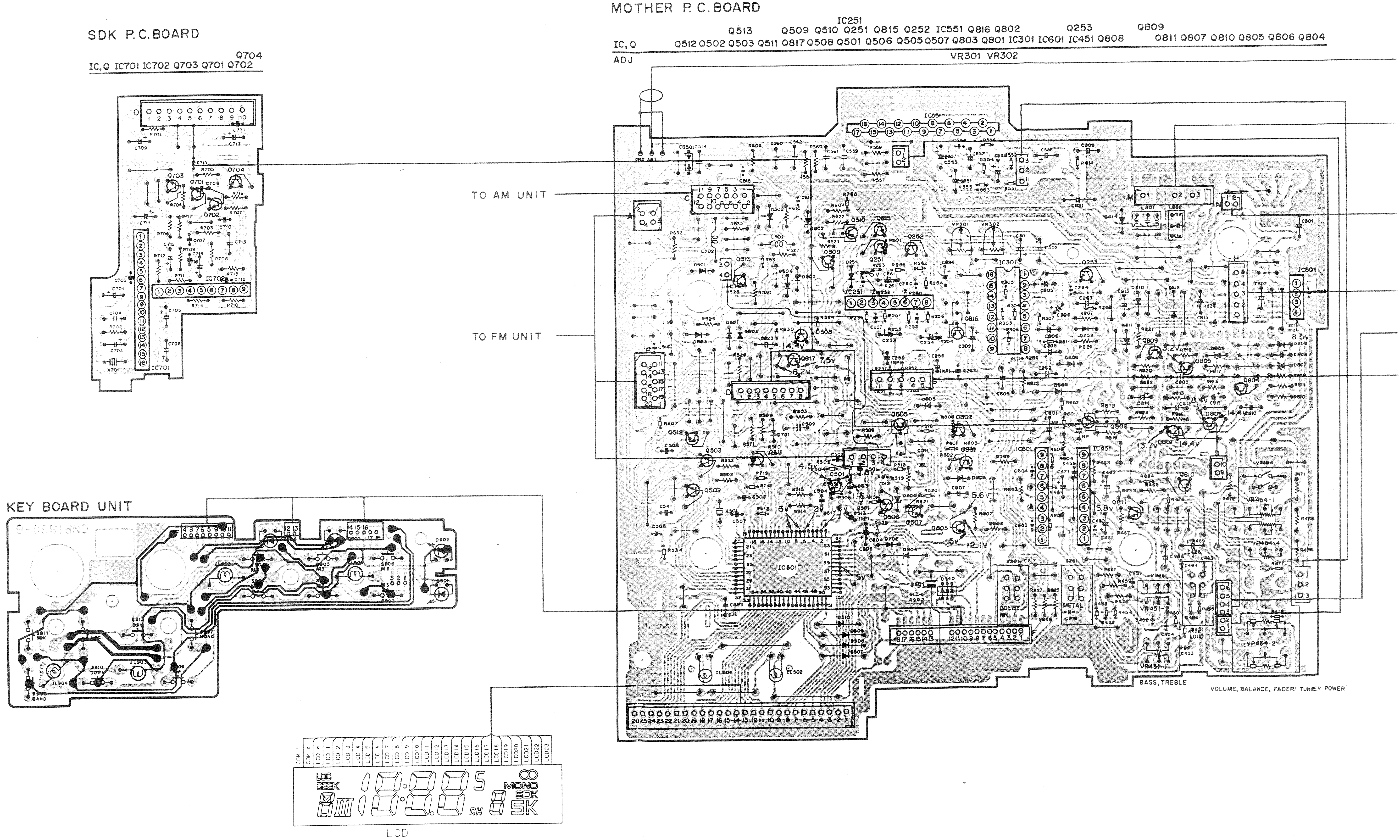
LOC
SEEK
MONO
SDK
SK
CH
LCD 0
LCD 1
LCD 2
LCD 3
LCD 4
LCD 5
LCD 6
LCD 7
LCD 8
LCD 9
LCD 10
LCD 11
LCD 12
LCD 13
LCD 14
LCD 15
LCD 16
LCD 17
LCD 18
LCD 19
LCD 20
LCD 21
LCD 22
LCD 23

•Front End Unit(CWB1032)



Q1 : 3SK181
VCC
R12 56
8.3V
C19 2200p
C25 0.012
C21 0.012
8.5V
L2
C5 6p
R6 180k
C1 22p
C3 22p
D2
C7 2200p
Q 1
R7 56
C10 270p
3.6V
8.5V
MIXER
T 1
R13 270
3.0V
IF AMP
5.4V
3.0V
L 1
R3 22k
R4 33k
C4 39p
C6 9p
R5 47k
L3
L4
C8 0.012
C9 12p
D3
R8 56k
BUFFER
8.5V
C24 47p
R14 560
CF 1
OSC
IC 1
LA1175M
LD
AGC
ANT. D
2.3V
1.6V
D2~4 : SVC203
D1 1SV128A
R2 150
C2 0.047
R1 22k
R9 56k
C11 0.012
D4
L5
C16 15p
C15 10p
C17 33p
1.7V
C18 15p
C14 0.001
R11 68
C12 0.001
R10 10k
C13 3.3/16
C22 0.012
8.4V
0V
C23 0.012

8.CONNECTION DIAGRAM (KEH-5090SDK)


1
2
3
4
5
6
A
B
C
D
SDK P.C.BOARD
IC,Q IC701 IC702 Q703 Q701 Q702 Q704
IC701
IC702
MOTHER P.C.BOARD
IC,Q Q513 Q509 Q510 IC251 Q251 Q815 Q252 IC551 Q816 Q802 Q253 Q809
Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q811 Q807 Q810 Q805 Q806 Q804
ADJ VR301 VR302
TO AM UNIT
TO FM UNIT
IC501
IC551
IC251
IC301
IC601
IC451
IC801
DOLBY NR
METAL
LOUD
BASS, TREBLE
VOLUME, BALANCE, FADER/ TUNER POWER
KEY BOARD UNIT
COM 1
COM 0
LCD 0
LCD 1
LCD 2
LCD 3
LCD 4
LCD 5
LCD 6
LCD 7
LCD 8
LCD 9
LCD10
LCD11
LCD12
LCD13
LCD14
LCD15
LCD16
LCD17
LCD18
LCD19
LCD20
LCD21
LCD22
LCD23
LOC
SEEK
MONO
SDK
SK
CH
LCD

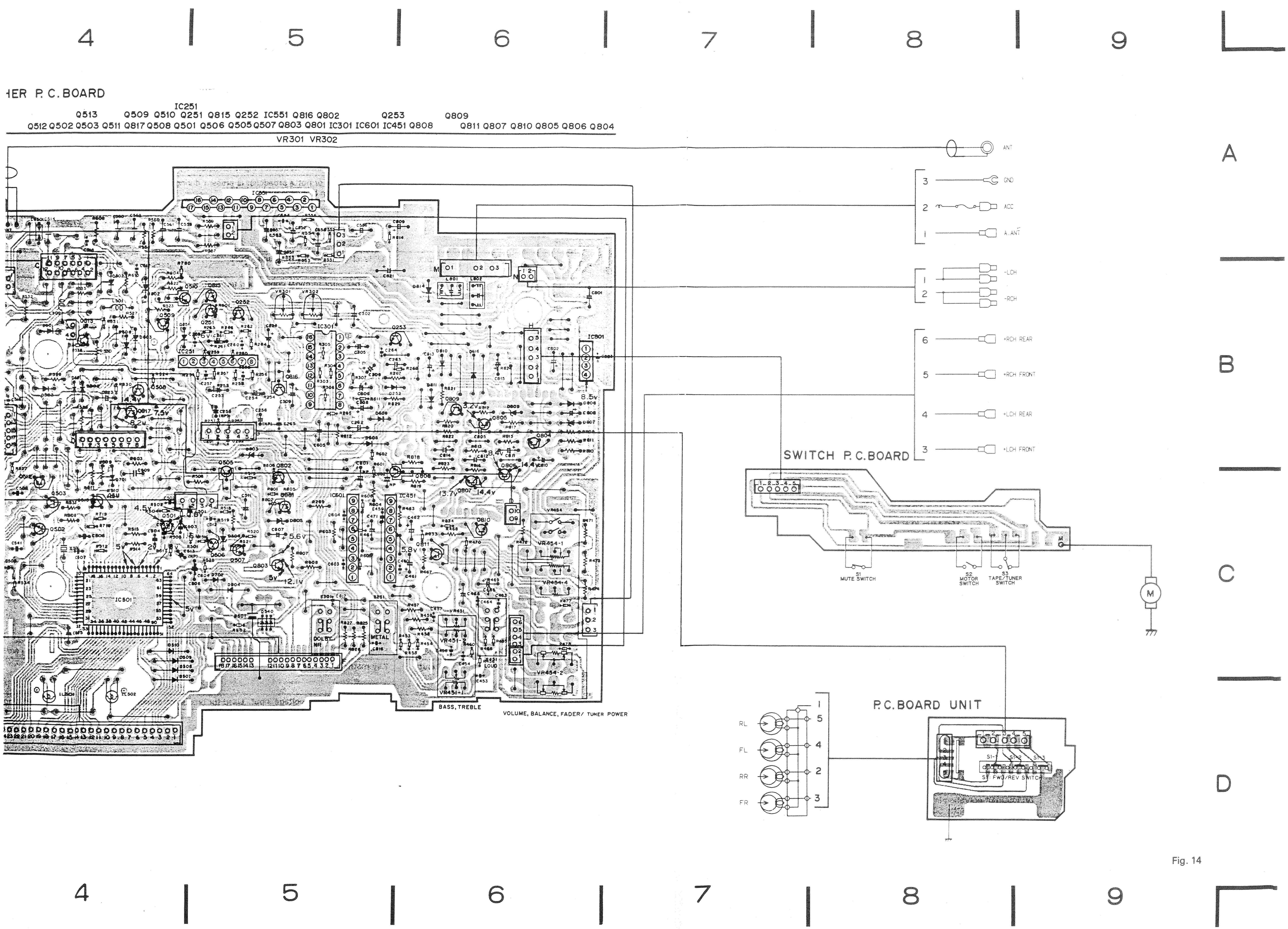

4
5
6
7
8
9
A
B
C
D
HER P.C. BOARD
IC251
Q513 Q509 Q510 Q251 Q815 Q252 IC551 Q816 Q802 Q253 Q809
Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q811 Q807 Q810 Q805 Q806 Q804
VR301 VR302
IC551
IC301
IC251
IC801
IC601
IC451
IC501
DOLBY NR
METAL
VR451-2
VR451-1
VR454
VR454-1
VR454-4
VR454-2
LOUD
BASS, TREBLE
VOLUME, BALANCE, FADER/ TUNER POWER
ANT
GND
ACC
A.ANT
-LCH
-RCH
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
SWITCH P.C.BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M
P.C.BOARD UNIT
S1 FWD/REV SWITCH
RL
FL
RR
FR

Fig. 14

10.SCHEMATIC CIRCUIT DIAGRAM

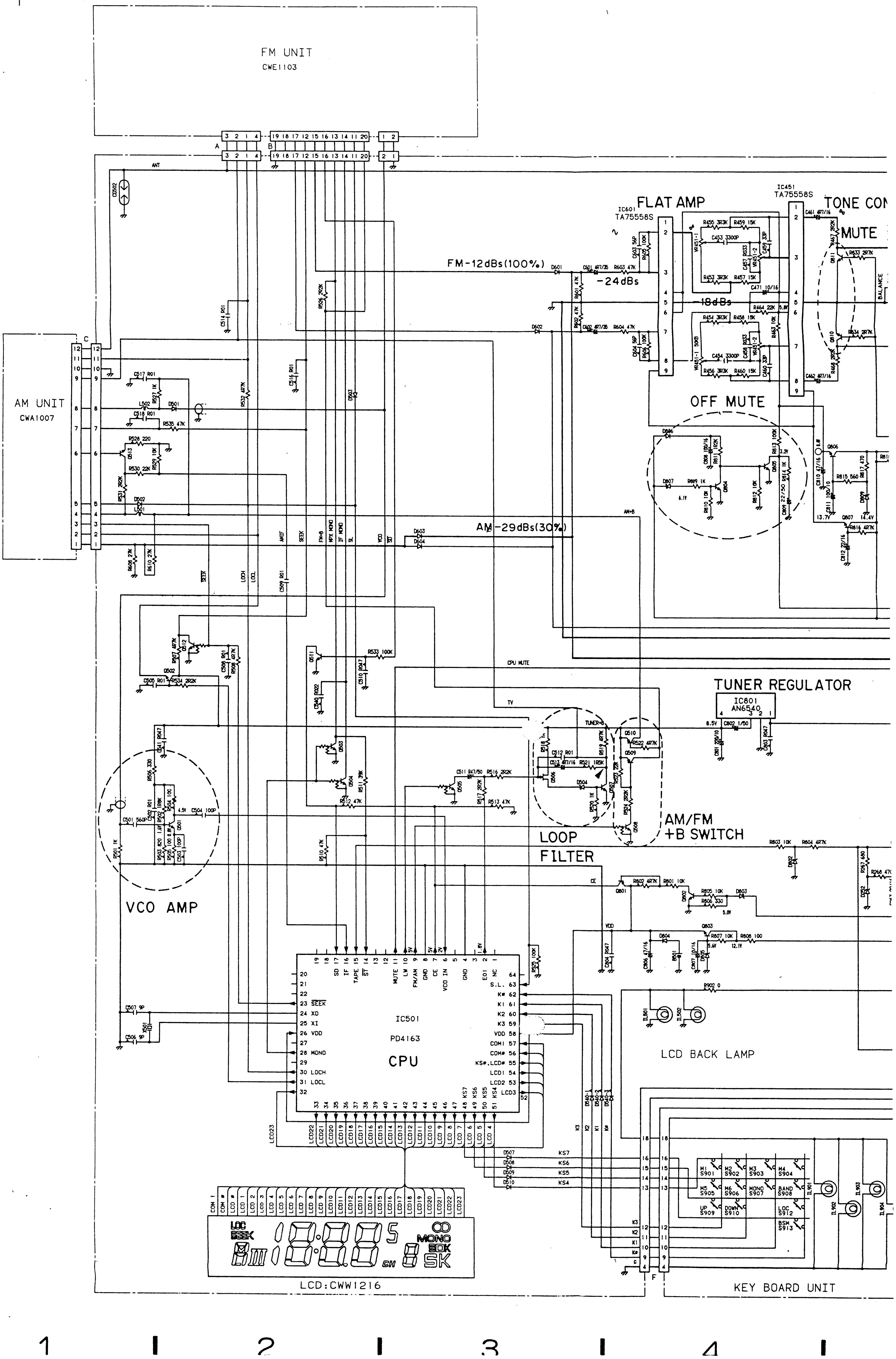
NOTE:

: Chip capacitor. Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

: Chip resistor.

: Chip diode.

: Chip transistor.



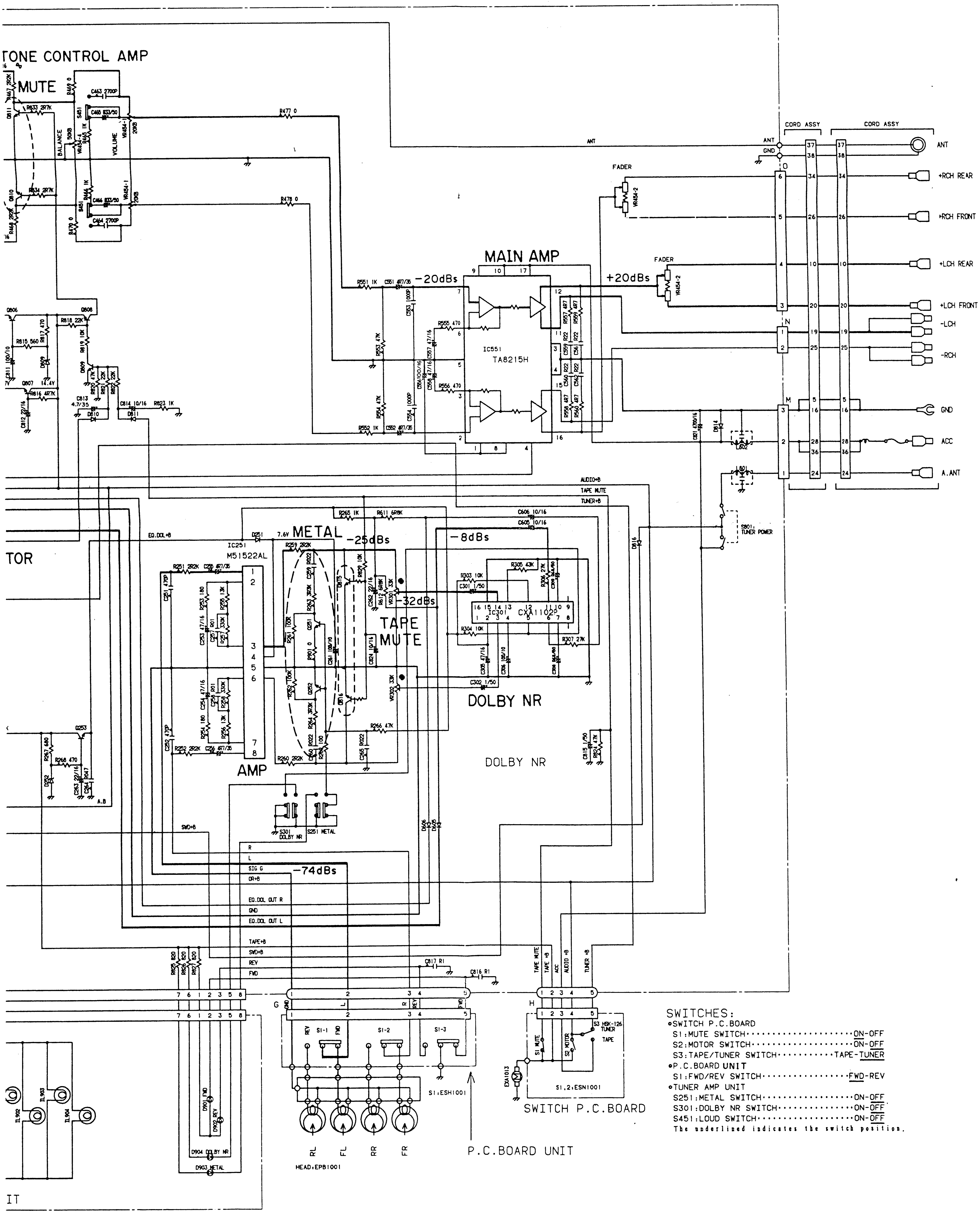
FM UNIT
CWE1103
AM UNIT
CWA1007
ANT
FLAT AMP
IC601
TA75558S
IC451
TA75558S
TONE CON
MUTE
OFF MUTE
BALANCE
FM-12dBs(100%)
-24dBs
-18dBs
AM-29dBs(30%)
TUNER REGULATOR
IC801
AN6540
LOOP
FILTER
AM/FM
+B SWITCH
VCO AMP
CPU MUTE
TUNER+B
AM+B
IC501
PD4163
CPU
SEEK
XO
XI
VDD
MONO
LOCH
LOCL
S.L.
COM1
COM2
LCD1
LCD2
LCD3
KS7
KS6
KS5
KS4
LCD BACK LAMP
IL501
IL502
LOC
SEEK
MONO
BSM
CH
SK
LCD:CWW1216
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
LOC S912
BSM S913
IL901
IL902
IL903
IL904
KEY BOARD UNIT

TUNER AMP UNIT

Q251,252,507,802-805, 809	2SC2458 (2SC1740S)
Q253,806,807	2SD1919
Q501	2SC2498
Q502	2SC4038
Q503,505,508,512	DTC144ES
Q504	DTC144EL
Q506	2SK330
Q509,510	2SA1150
Q511,513	2SC3113
Q801,808	2SA1048
Q810,811	2SD1468S
Q815,816	DTC314TS
D251,502,503,601-604, 606,806,810,811	1SS133
D252	HZS9R1EB2 (RD9R1ESB2)
D501	1SS135
D504	HZS3R0EB2 (RD3R0ESB2)
D507-510,605,816	1S1555
D540	MA78-TR
D802	HZS5R1EB2 (RD5R1ESB2)
D803	HZS7R5EB2 (RD7R5ESB2)
D804	MA700
D805	HZS5R6JB2 (RD5R6JSB2)
D807	HZS8R2JB2 (RD8R2JSB2)
D809	HZS9R1EB2 (RD9R1ESB2)
D814	SM-3-02
S251,301,451	CSG-207
IL501,502	CEL1025
VR301,302	VRTB6VS333
VR451	CSS1114
VR454/S801	CCS1113

KEY BOARD UNIT

D901,902	SLR-320DU3LM
D903 904	SLR-320PG3KL
S901-910,912,913	CSG-253 (CSG1021)
IL 901-904	CEL1025


TUNER AMP UNIT
TONE CONTROL AMP
MUTE
BALANCE
VOLUME
R477 0
R478 0
ANT
GND
CORD ASSY
CORD ASSY
ANT
FADER
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
GND
ACC
A.ANT
MAIN AMP
-20dBs
+20dBs
IC551
TA8215H
AUDIO+B
TAPE MUTE
TUNER+B
S801:
TUNER POWER
EQ.DOL+B
IC251
M51522AL
7.6V
METAL
-25dBs
-8dBs
-32dBs
TAPE
MUTE
IC301
CXA1102S
DOLBY NR
DOLBY NR
AMP
TOR
S301
DOLBY NR
S251 METAL
SWD+B
R
L
SIG G
DR+B
-74dBs
EQ.DOL OUT R
GND
EQ.DOL OUT L
TAPE+B
SWD+B
REV
FWD
TAPE MUTE
TAPE +B
ACC
AUDIO +B
GND
TUNER +B
G
H
S1-1
S1-2
S1-3
REV
FWD
S1:ESH1001
S1 MUTE
S2 MOTOR
S3 HSK-126
TUNER
TAPE
S1,2:ESN1001
EXA1013
SWITCH P.C.BOARD
RL
FL
RR
FR
HEAD:EPB1001
P.C.BOARD UNIT
D901 FWD
D902 REV
D904 DOLBY NR
D903 METAL
IL902
IL903
IL904
IT

SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH························ON-OFF
  - S2:MOTOR SWITCH························ON-OFF
  - S3:TAPE/TUNER SWITCH··············TAPE-TUNER
- P.C.BOARD UNIT
  - S1:FWD/REV SWITCH····················FWD-REV
- TUNER AMP UNIT
  - S251:METAL SWITCH····················ON-OFF
  - S301:DOLBY NR SWITCH················ON-OFF
  - S451:LOUD SWITCH·····················ON-OFF

The underlined indicates the switch position.

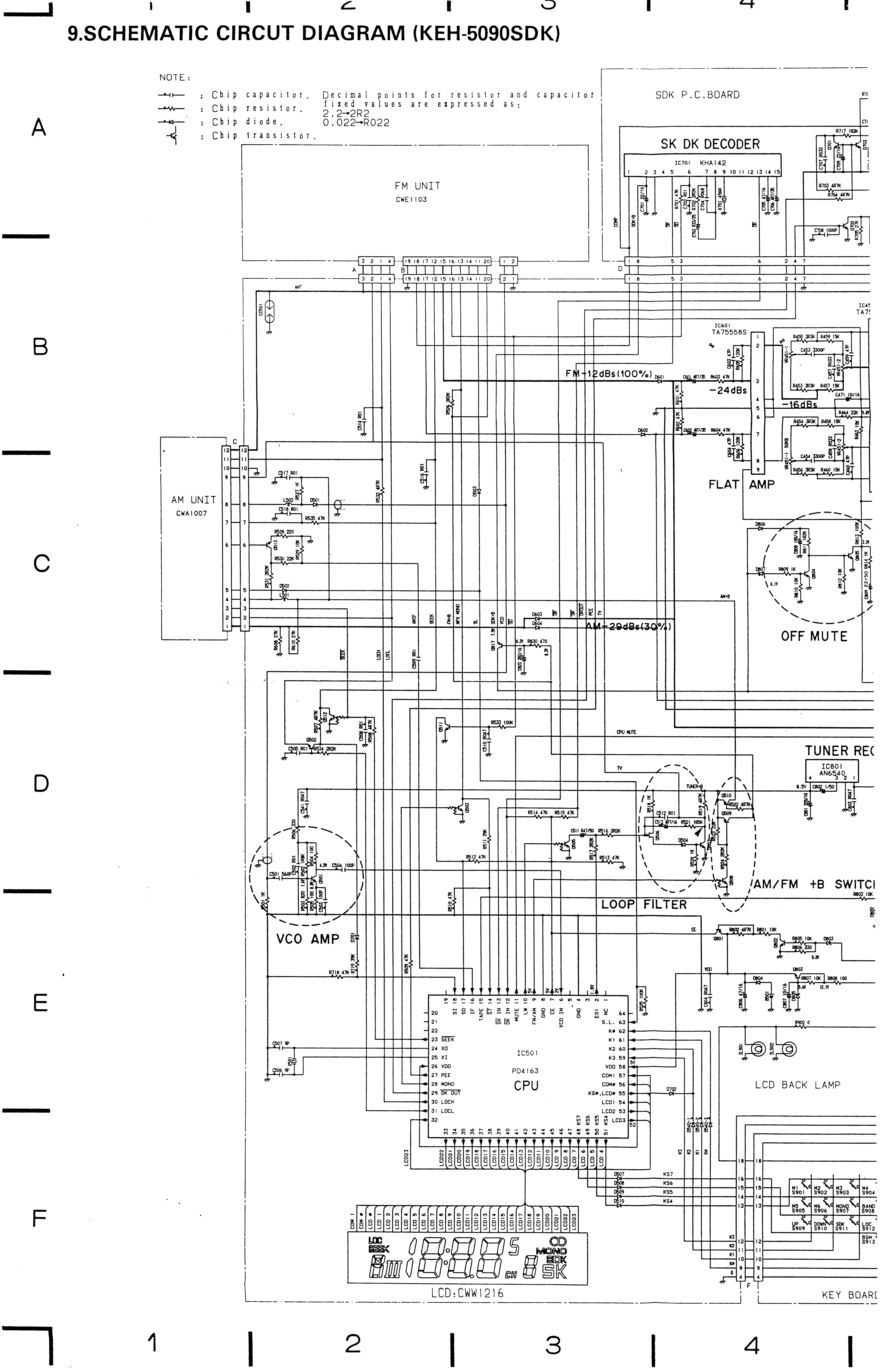
Fig. 1

9.SCHEMATIC CIRCUIT DIAGRAM (KEH-5090SDK)

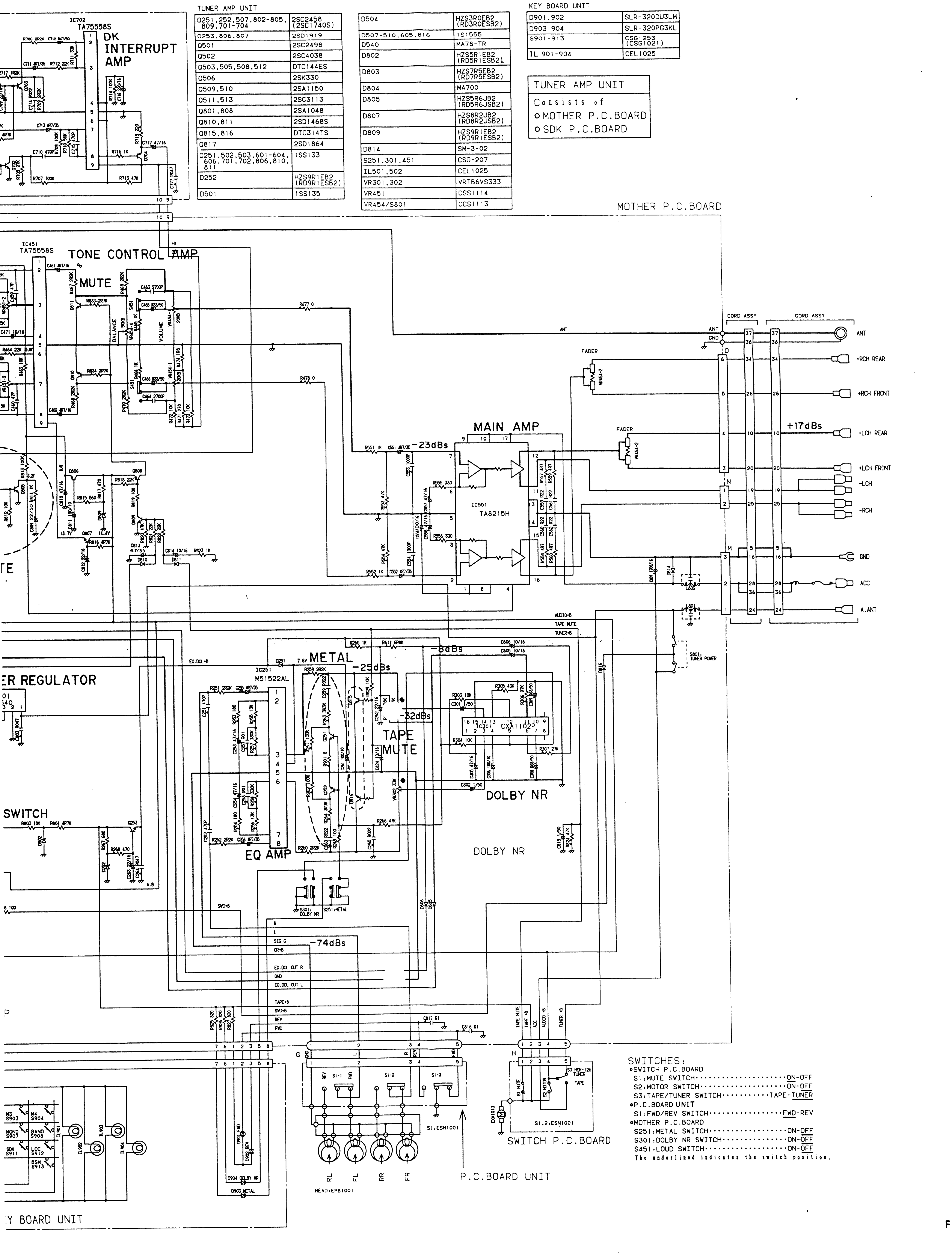
NOTE:

: Chip capacitor.
: Chip resistor.
: Chip diode.
: Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022



1
2
3
4
A
B
C
D
E
F
SDK P.C.BOARD
SK DK DECODER
IC701 KHA142
FM UNIT
CWE1103
AM UNIT
CWA1007
IC601
TA75558S
FM-12dBs(100%)
-24dBs
-16dBs
FLAT AMP
OFF MUTE
AM-29dBs(30%)
TUNER REG
IC801
AN6540
AM/FM +B SWITCH
LOOP FILTER
VCO AMP
IC501
PD4163
CPU
LCD BACK LAMP
LCD:CWW1216
KEY BOARD
LOC
SEEK
MONO
SDK
SK
CH
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
SDK S911
LOC S912
BSM S913
ANT
CPU MUTE
TV
TUNER+B
AM+B
CE
VDD


IC702
TA75558S
DK INTERRUPT AMP
IC451
TA75558S
TONE CONTROL AMP
MUTE
BALANCE
VOLUME
MOTHER P.C.BOARD
CORD ASSY
ANT
GND
FADER
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
ACC
A.ANT
MAIN AMP
IC551
TA8215H
-23dBs
+17dBs
AUDIO+B
TAPE MUTE
TUNER+B
S801: TUNER POWER
ER REGULATOR
SWITCH
IC251
M51522AL
METAL
-8dBs
-25dBs
-32dBs
TAPE MUTE
IC301
CXA1102P
DOLBY NR
EQ AMP
S301: DOLBY NR
S251: METAL
R
L
SIG G
DR+B
-74dBs
EQ.DOL OUT R
GND
EQ.DOL OUT L
TAPE+B
SWD+B
REV
FWD
G
H
S1-1
S1-2
S1-3
S1: ESH1001
HEAD: EPB1001
RL
FL
RR
FR
P.C.BOARD UNIT
S3 HSK-126
TUNER
TAPE
S1 MUTE
S2 MOTOR
EXA1013
S1, 2: ESH1001
SWITCH P.C.BOARD
S903 M3
S904 M4
S907 MONO
S908 BAND
S911 SDK
S912 LOC
S913 BSM
IL901
IL902
IL903
IL904
D901 FWD
D902 REV
D904 DOLBY NR
D903 METAL
Y BOARD UNIT
5
6
7
8
9

TUNER AMP UNIT

Q251, 252, 507, 802-805, 809, 701-704	2SC2458 (2SC1740S)
Q253, 806, 807	2SD1919
Q501	2SC2498
Q502	2SC4038
Q503, 505, 508, 512	DTC144ES
Q506	2SK330
Q509, 510	2SA1150
Q511, 513	2SC3113
Q801, 808	2SA1048
Q810, 811	2SD1468S
Q815, 816	DTC314TS
Q817	2SD1864
D251, 502, 503, 601-604, 606, 701, 702, 806, 810, 811	1SS133
D252	HZS9R1EB2 (RD9R1ESB2)
D501	1SS135

D504	HZS3R0EB2 (RD3R0ESB2)
D507-510, 605, 816	1S1555
D540	MA78-TR
D802	HZS5R1EB2 (RD5R1ESB2)
D803	HZS7R5EB2 (RD7R5ESB2)
D804	MA700
D805	HZS5R6JB2 (RD5R6JSB2)
D807	HZS8R2JB2 (RD8R2JSB2)
D809	HZS9R1EB2 (RD9R1ESB2)
D814	SM-3-02
S251, 301, 451	CSG-207
IL501, 502	CEL1025
VR301, 302	VRTB6VS333
VR451	CSS1114
VR454/S801	CCS1113

KEY BOARD UNIT

D901, 902	SLR-320DU3LM
D903 904	SLR-320PG3KL
S901-913	CSG-253 (CSG1021)
IL 901-904	CEL1025

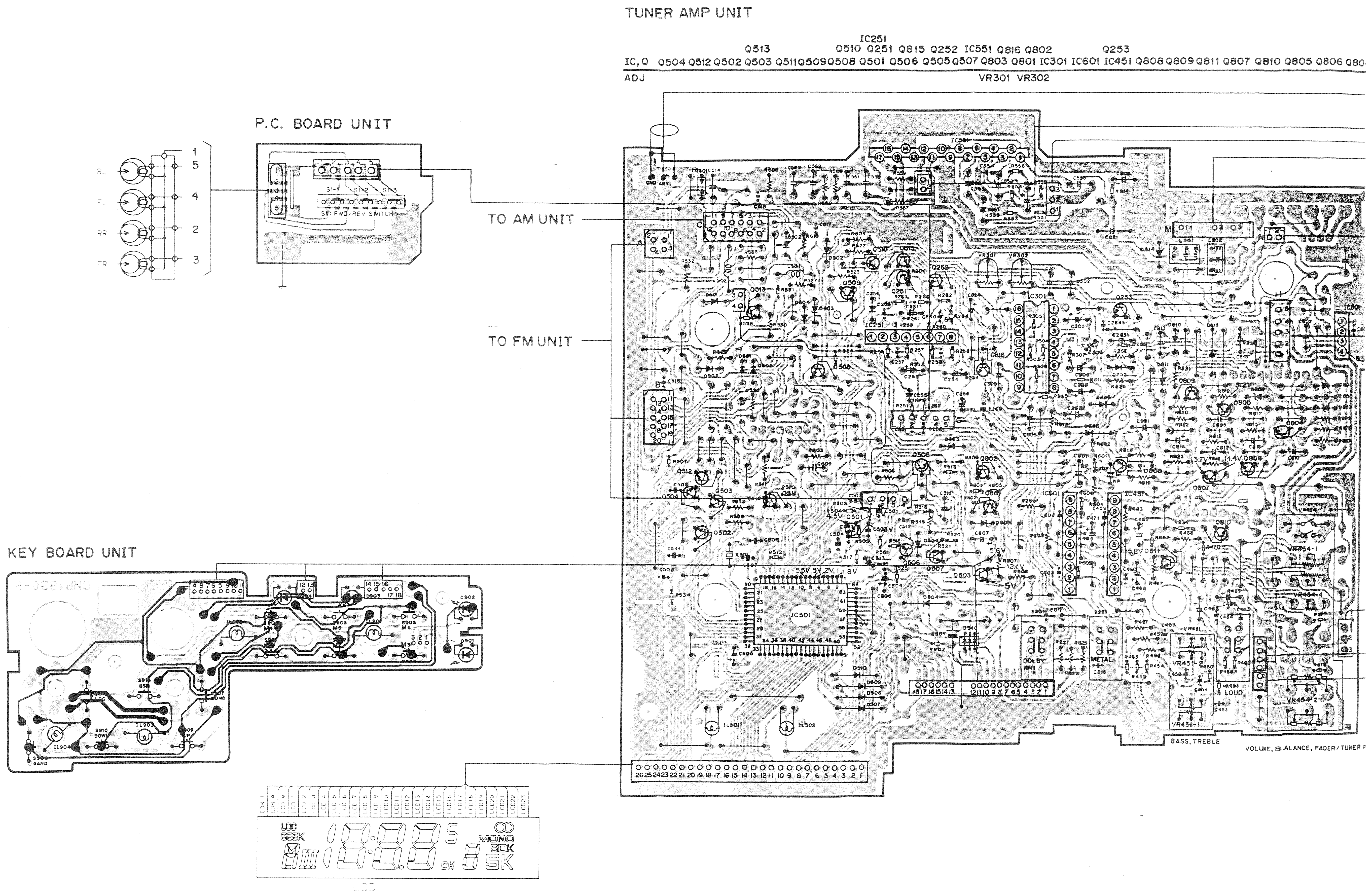
TUNER AMP UNIT

Consists of
○ MOTHER P.C.BOARD
○ SDK P.C.BOARD

SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH··························ON-OFF
  - S2:MOTOR SWITCH·························ON-OFF
  - S3:TAPE/TUNER SWITCH···········TAPE-TUNER
- P.C.BOARD UNIT
  - S1:FWD/REV SWITCH······················FWD-REV
- MOTHER P.C.BOARD
  - S251:METAL SWITCH·····················ON-OFF
  - S301:DOLBY NR SWITCH················ON-OFF
  - S451:LOUD SWITCH······················ON-OFF

The underlined indicates the switch position.

11.CONNECTION DIAGRAM (KEH-5090B)


1
2
3
4
5
6
A
B
C
D
TUNER AMP UNIT
IC251
Q513
Q510 Q251 Q815 Q252 IC551 Q816 Q802
Q253
IC, Q Q504 Q512 Q502 Q503 Q511 Q509 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q80
ADJ
VR301 VR302
P.C. BOARD UNIT
RL
FL
RR
FR
1
5
4
2
3
S1-1
S1-2
S1-3
S1 FWD/REV SWITCH
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
IC501
IC301
IC601
IC451
DOLBY
METAL
LOUD
VR451-1
VR451-2
VR454-1
VR454-2
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
LOC
SEEK
MONO
SK
CH
LCD

1 2 3 4 5 6

TUNER AMP UNIT

IC251
Q513 Q510 Q251 Q815 Q252 IC551 Q816 Q802 Q253
IC, Q Q504 Q512 Q502 Q503 Q511 Q509 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
ADJ VR301 VR302

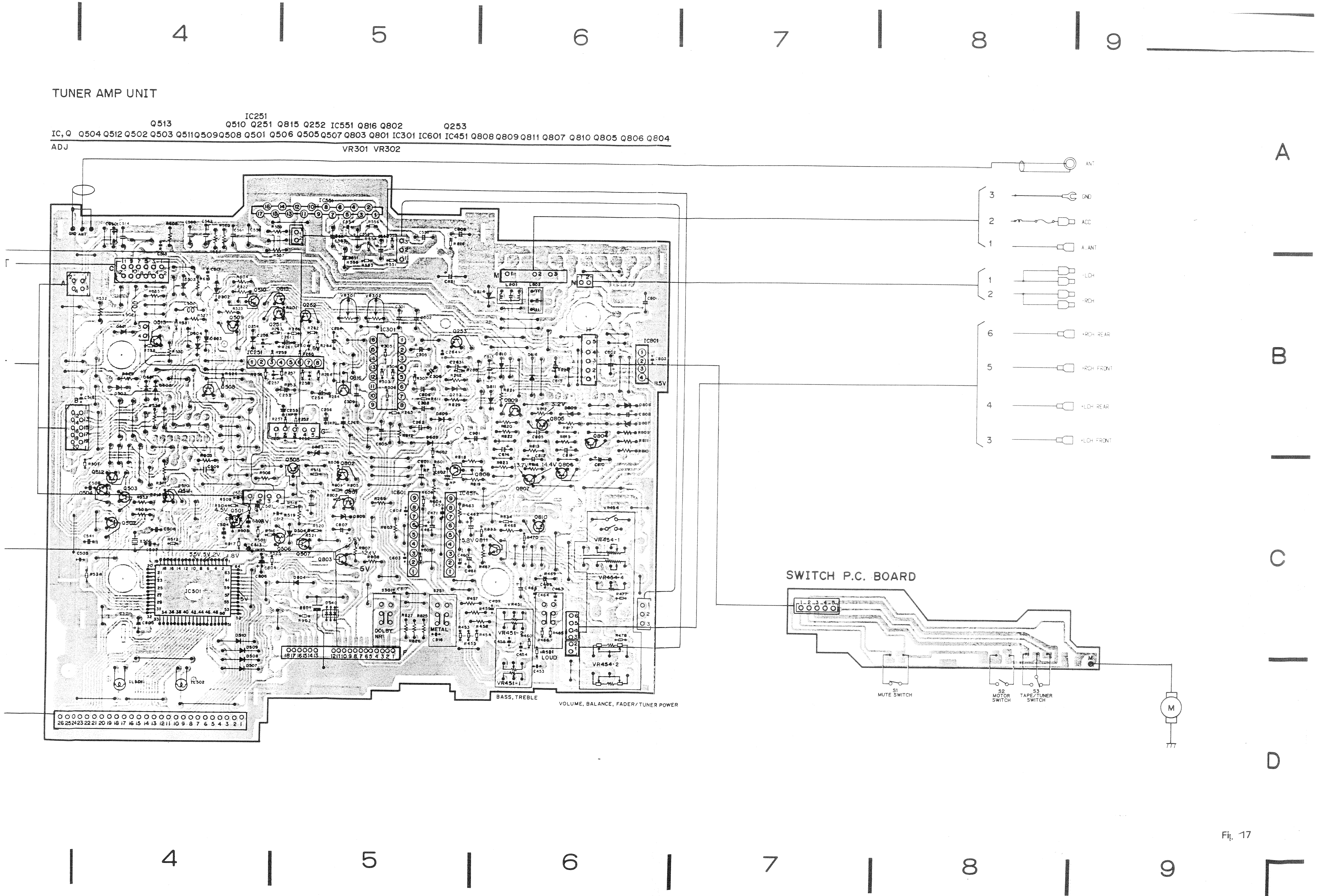
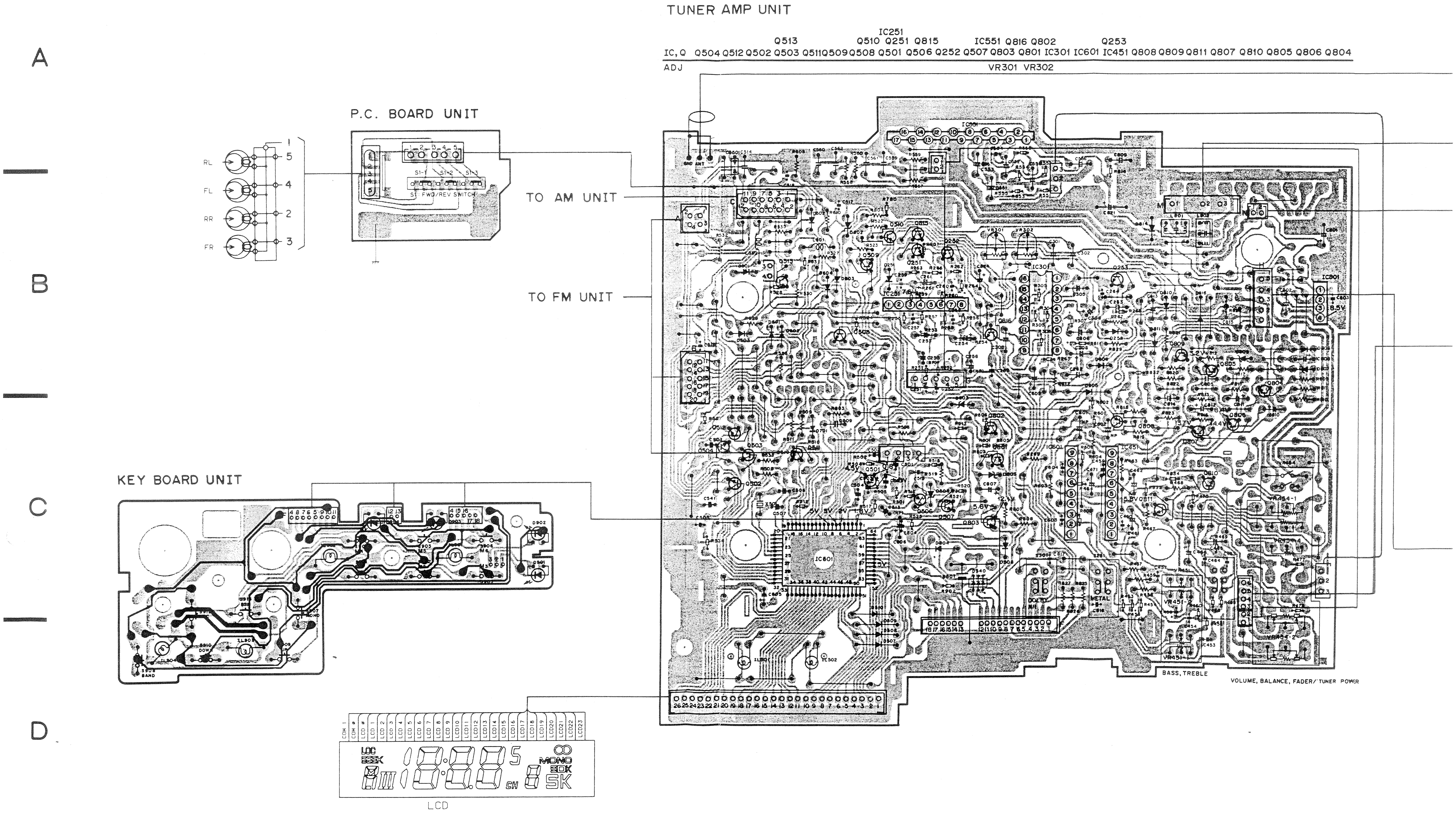

4
5
6
7
8
9
A
B
C
D
ANT
GND
ACC
A.ANT
LCH
RCH
RCH REAR
RCH FRONT
LCH REAR
LCH FRONT
3
2
1
6
5
4
IC551
IC301
IC251
IC801
IC601
IC451
IC501
VR301
VR302
DOLBY NR
METAL
LOUD
VR451-1
VR451-2
VR454-1
VR454-2
VR454-4
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
SWITCH P.C. BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M
3.2V
13.7V
14.4V
4.5V
5.6V
12V
5V
5.8V
8.5V
5.5V 5V 2V 4.8V

Fig. 17

1 2 3 4 5 6

12.CONNECTION DIAGRAM (KEH-5070QR)


A
B
C
D
TUNER AMP UNIT
IC251
Q513 Q510 Q251 Q815 IC551 Q816 Q802 Q253
IC, Q Q504 Q512 Q502 Q503 Q511 Q509 Q508 Q501 Q506 Q252 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
ADJ VR301 VR302
P.C. BOARD UNIT
S1 FWD/REV SWITCH
RL
FL
RR
FR
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
IC601
DOLBY NR
METAL
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
COM 1
COM 2
LCD 1
LCD 2
LCD 3
LCD 4
LCD 5
LCD 6
LCD 7
LCD 8
LCD 9
LCD10
LCD11
LCD12
LCD13
LCD14
LCD15
LCD16
LCD17
LCD18
LCD19
LCD20
LCD21
LCD22
LCD23
LOC
SEEK
MONO
SDK
CH
SK
LCD

1 2 3 4 5 6

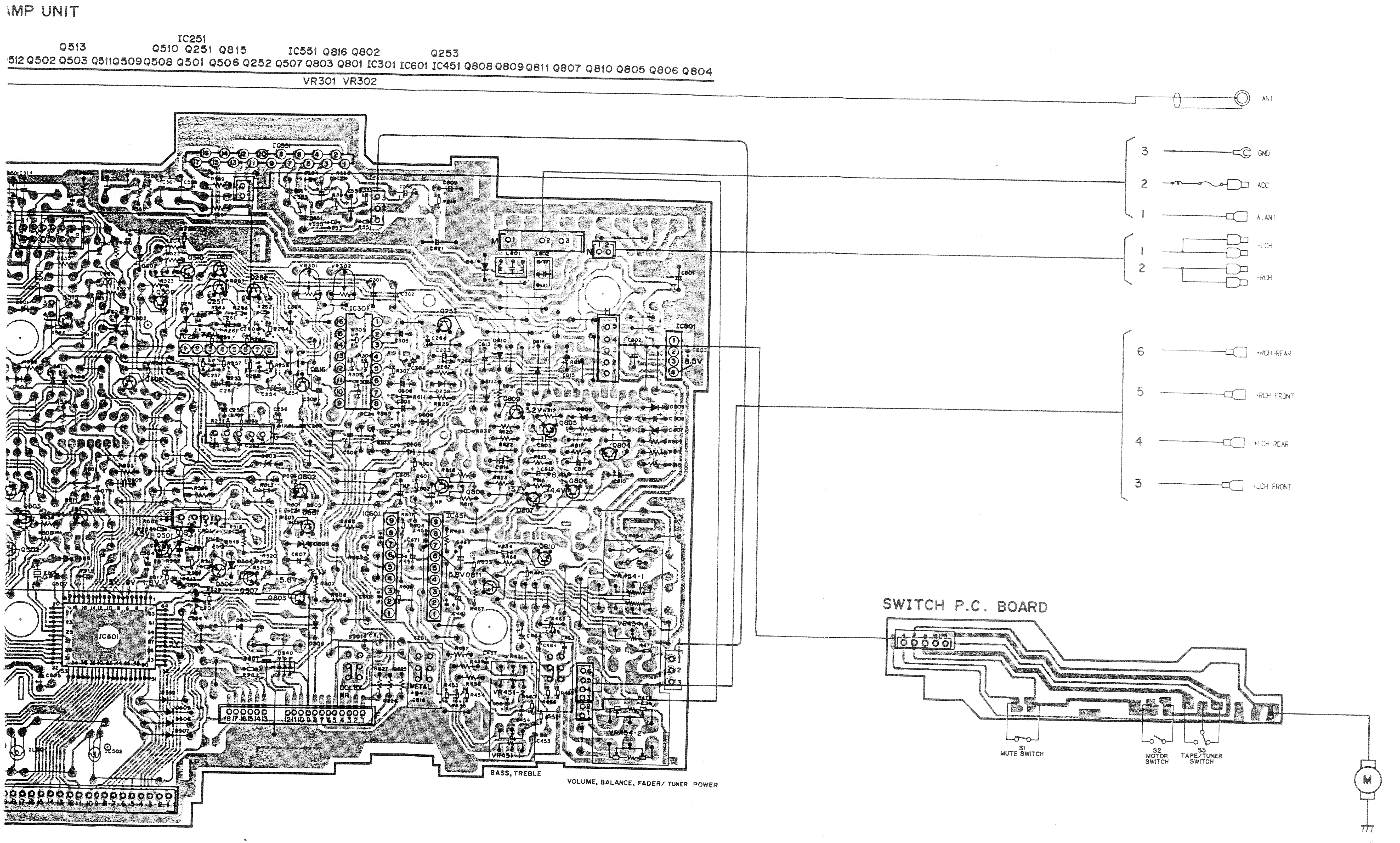

MP UNIT
IC251
Q513
Q510 Q251 Q815
IC551 Q816 Q802
Q253
512 Q502 Q503 Q511 Q509 Q508 Q501 Q506 Q252 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
VR301 VR302
ANT
3 GND
2 ACC
1 A.ANT
1 -LCH
2 -RCH
6 +RCH REAR
5 +RCH FRONT
4 +LCH REAR
3 +LCH FRONT
SWITCH P.C. BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
DOLBY NR
METAL
4 5 6 7 8 9
A B C D

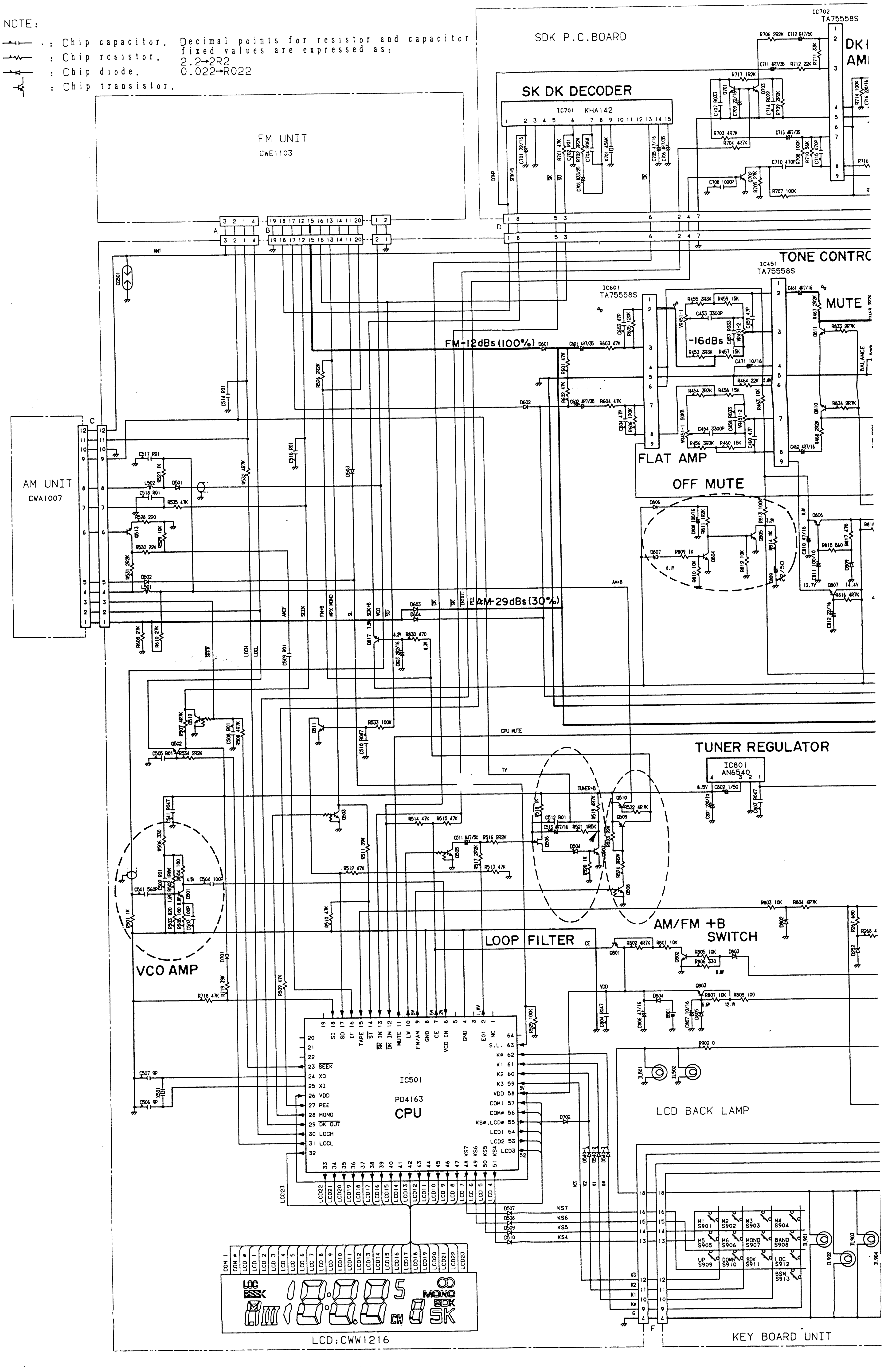
Fig. 18

14.SCHEMATIC CIRCUIT DIAGRAM

NOTE:

- : Chip capacitor.
- : Chip resistor.
- : Chip diode.
- : Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022



1
2
3
4
5
A
B
C
D
E
F
SDK P.C.BOARD
SK DK DECODER
IC701 KHA142
IC702 TA75558S
DK
AM
FM UNIT
CWE1103
TONE CONTRO
IC451 TA75558S
IC601 TA75558S
MUTE
FM-12dBs(100%)
-16dBs
BALANCE
FLAT AMP
OFF MUTE
AM UNIT
CWA1007
AM-29dBs(30%)
TUNER REGULATOR
IC801 AN6540
CPU MUTE
TUNER+B
AM/FM +B SWITCH
LOOP FILTER
VCO AMP
IC501
PD4163
CPU
LCD BACK LAMP
KEY BOARD UNIT
LCD:CWW1216
LOC
SEEK
MONO
SDK
SK
CH
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
SDK S911
LOC S912
BSM S913
KS7
KS6
KS5
KS4

TUNER AMP UNIT

Q253,806,807	2SD1919
Q501	2SC2498
Q502	2SC4038
Q503,505,508,512	DTC144ES
Q506	2SK330
Q507,802-805,809,701-704	2SC2458 (2SC1740S)
Q509,510	2SA1150
Q511,513	2SC3113
Q801,808	2SA1048
Q810,811	2SD1468S
Q815,816	DTC314TS
Q817	2SD1864
D251,502,503,601-604,606,701,702,806,810,811	1SS133
D252	HZS9R1EB2 (RD9R1ESB2)
D501	1SS135

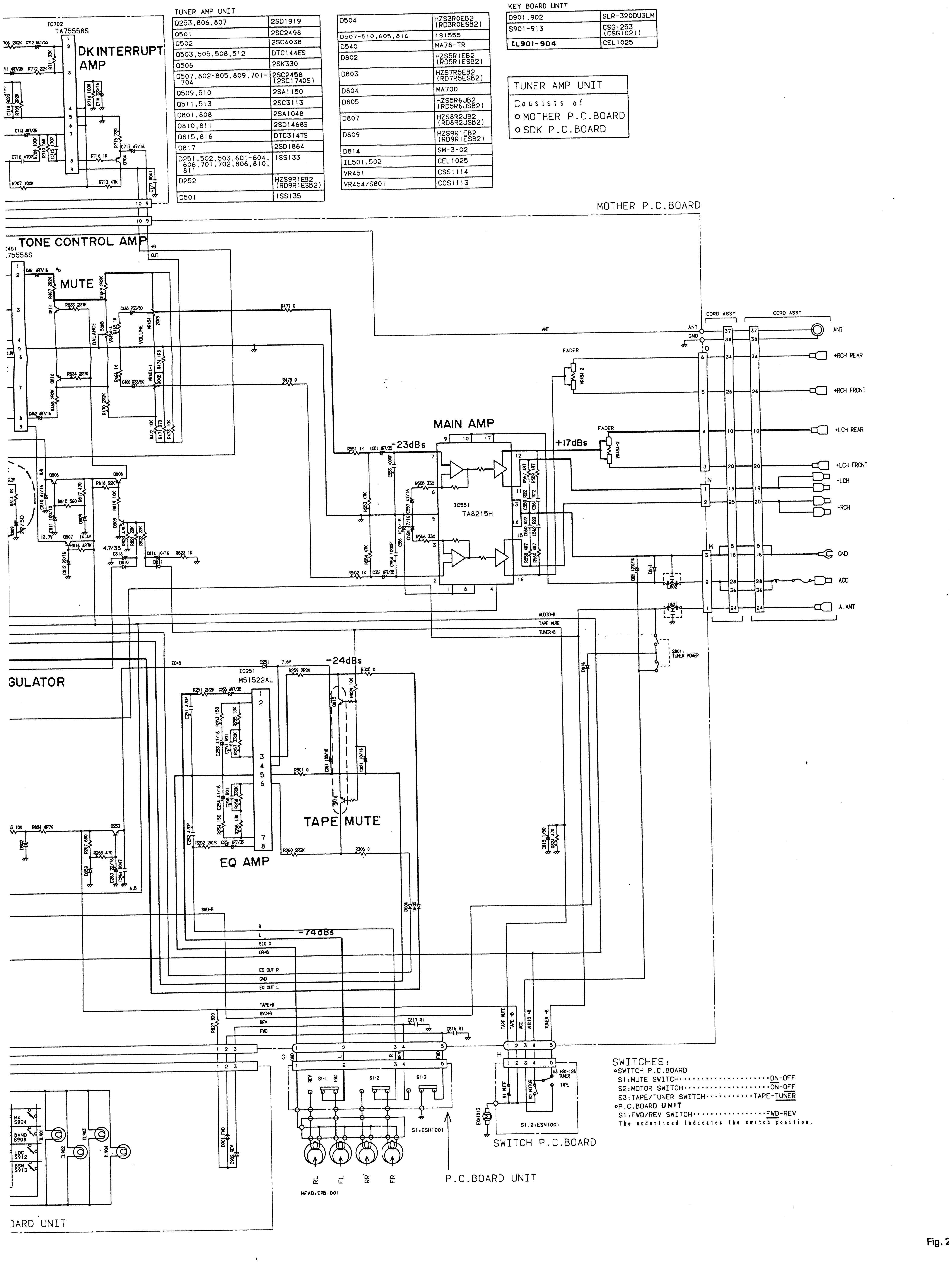
D504	HZS3R0EB2 (RD3R0ESB2)
D507-510,605,816	1S1555
D540	MA78-TR
D802	HZS5R1EB2 (RD5R1ESB2)
D803	HZS7R5EB2 (RD7R5ESB2)
D804	MA700
D805	HZS5R6JB2 (RD5R6JSB2)
D807	HZS8R2JB2 (RD8R2JSB2)
D809	HZS9R1EB2 (RD9R1ESB2)
D814	SM-3-02
IL501,502	CEL1025
VR451	CSS1114
VR454/S801	CCS1113

KEY BOARD UNIT

D901,902	SLR-320DU3LM
S901-913	CSG-253 (CSG1021)
IL901-904	CEL1025

TUNER AMP UNIT

Consists of
- ○ MOTHER P.C.BOARD
- ○ SDK P.C.BOARD


IC702
TA75558S
DK INTERRUPT AMP
MOTHER P.C.BOARD
TONE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
VOLUME
FADER
CORD ASSY
CORD ASSY
ANT
GND
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
GND
ACC
A.ANT
MAIN AMP
-23dBs
+17dBs
IC551
TA8215H
AUDIO+B
TAPE MUTE
TUNER+B
S801: TUNER POWER
GULATOR
IC251
M51522AL
-24dBs
TAPE MUTE
EQ AMP
-74dBs
R
L
SIG G
CR+B
EQ OUT R
GND
EQ OUT L
TAPE+B
SWD+B
REV
FWD
S1-1
S1-2
S1-3
REV
FWD
S1:ESH1001
RL
FL
RR
FR
HEAD:EPB1001
P.C.BOARD UNIT
TAPE MUTE
TAPE +B
ACC
AUDIO +B
TUNER +B
S1 MUTE
S2 MOTOR
S3 MSK-126
TUNER
TAPE
S1,2:ESN1001
SWITCH P.C.BOARD
M4 S904
BAND S908
LOC S912
BSM S913
IL901
IL902
IL903
IL904
D901 FWD
D902 REV
OARD UNIT
5
6
7
8
9

SWITCHES:
- ∘SWITCH P.C.BOARD
  - S1:MUTE SWITCH······················ON-OFF
  - S2:MOTOR SWITCH······················ON-OFF
  - S3:TAPE/TUNER SWITCH···········TAPE-TUNER
- ∘P.C.BOARD **UNIT**
  - S1:FWD/REV SWITCH·················FWD-REV

The underlined indicates the switch position.

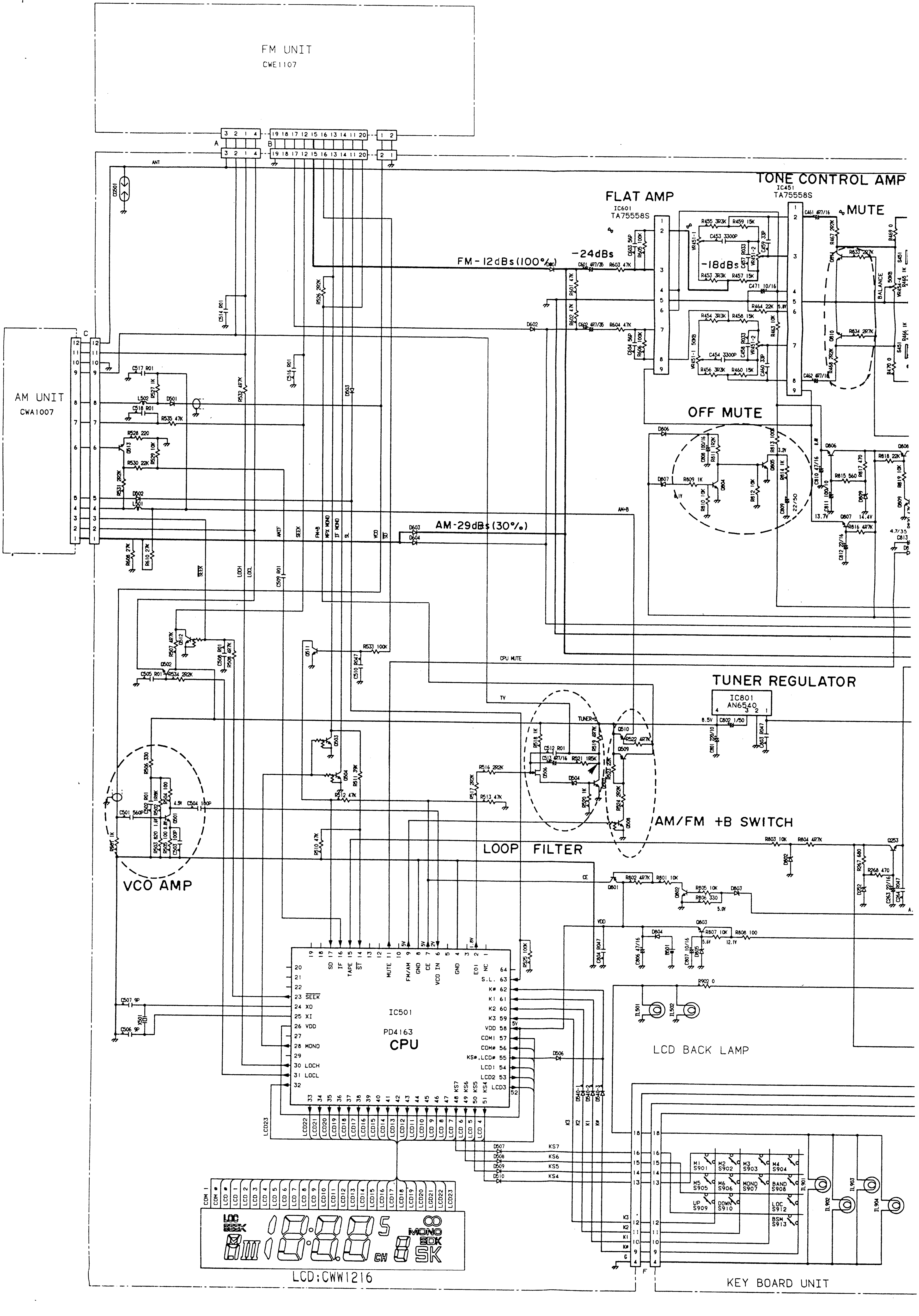
Fig. 2

13.SCHEMATIC CIRCUIT DIAGRAM

NOTE:

- : Chip capacitor.
- : Chip resistor.
- : Chip diode.
- : Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022



FM UNIT
CWE1107
AM UNIT
CWA1007
TONE CONTROL AMP
IC451
TA75558S
MUTE
FLAT AMP
IC601
TA75558S
-24dBs
-18dBs
FM-12dBs(100%)
BALANCE
OFF MUTE
AM-29dBs(30%)
ANT
AM+B
CPU MUTE
TUNER REGULATOR
IC801
AN6540
TUNER+B
AM/FM +B SWITCH
LOOP FILTER
VCO AMP
IC501
PD4163
CPU
SEEK
LOCH
LOCL
AMIF
FM+B
MPX MONO
IF MONO
SL
VCO
ST
CE
VDD
LCD BACK LAMP
LCD:CWW1216
LOC
SEEK
MONO
SK
KEY BOARD UNIT
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
LOC S912
BSM S913

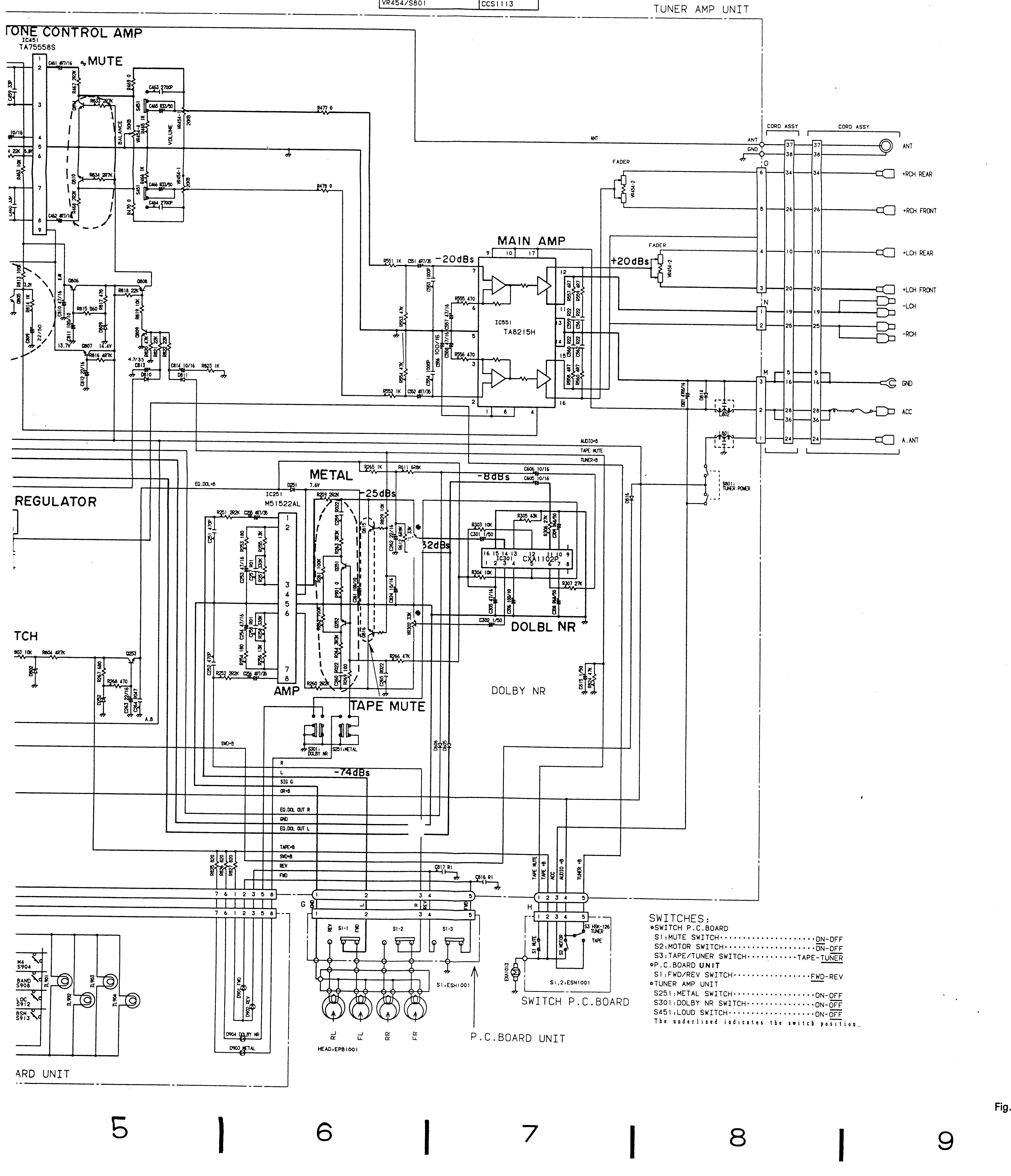
TUNER AMP UNIT

Q251,252,507,802-805, 809	2SC2458 (2SC1740S)
Q253,806,807	2SD1919
Q501	2SC2498
Q502	2SC4038
Q503,505,508,512	DTC144ES
Q504	DTC144EL
Q506	2SK330
Q509,510	2SA1150
Q511,513	2SC3113
Q801,808	2SA1048
Q810,811	2SD1468S
Q815,816	DTC314TS
D251,502,503,506,601- 604,606,806,810,811	1SS133
D252	HZS9R1EB2 (RD9R1ESB2
D501	1SS135

D504	HZS3R0EB2 (RD3R0ESB2)
D507-510,605,816	1S1555
D540	MA78-TR
D802	HZS5R1EB2 (RD5R1ESB2)
D803	HZS7R5EB2 (RD7R5ESB2)
D804	MA700
D805	HZS5R6JB2 (RD5R6JSB2)
D807	HZS8R2JB2 (RD8R2JSB2)
D809	HZS9R1EB2 (RD9R1ESB2)
D814	SM-3-02
S251,301,451	CSG-207
IL501,502	CEL1025
VR301,302	VRTB6VS333
VR451	CSS1114
VR454/S801	CCS1113

KEY BOARD UNIT

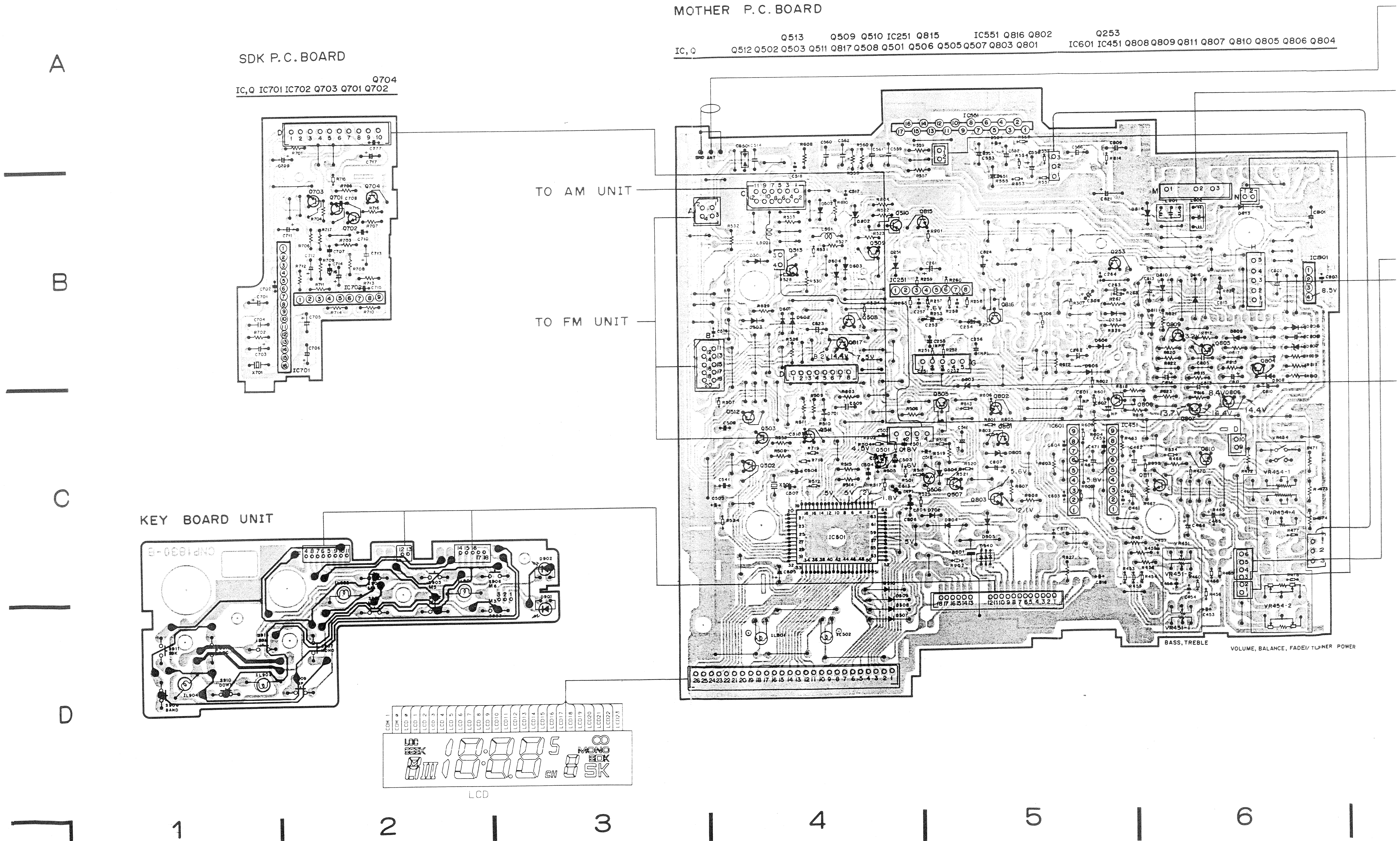
D901,902	SLR-320DU3LM
D903 904	SLR-320PG3KL
S901-910,912,913	CSG-253 (CSG1021)
IL901-904	CEL1025


TUNER AMP UNIT
ONE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
VOLUME
VR454-1
S451
MAIN AMP
IC551
TA8215H
-20dBs
+20dBs
FADER
VR454-2
CORD ASSY
CORD ASSY
ANT
GND
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
GND
ACC
A.ANT
S801 TUNER POWER
AUDIO+B
TAPE MUTE
TUNER+B
REGULATOR
METAL
IC251
M51522AL
-25dBs
-8dBs
32dBs
IC301
CXA1102P
DOLBL NR
DOLBY NR
TCH
AMP
TAPE MUTE
S301 DOLBY NR
S251 METAL
-74dBs
R
L
SIG G
DR+B
EQ.DOL OUT R
GND
EQ.DOL OUT L
TAPE+B
SWD+B
REV
FWD
S1-1
S1-2
S1-3
S1 ESH1001
HEAD EPB1001
RL
FL
RR
FR
P.C.BOARD UNIT
S1 MUTE
S2 MOTOR
S3 HSK-126 TUNER
TAPE
S1,2 ESN1001
EXA1013
SWITCH P.C.BOARD
M4 S904
BAND S908
LOC S912
BSM S913
IL901
IL902
IL903
IL904
D901 FWD
D902 REV
D904 DOLBY NR
D903 METAL
ARD UNIT
5
6
7
8
9
Fig.

SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH··························ON-OFF
  - S2:MOTOR SWITCH························ON-OFF
  - S3:TAPE/TUNER SWITCH··············TAPE-TUNER
- P.C.BOARD **UNIT**
  - S1:FWD/REV SWITCH····················FWD-REV
- TUNER AMP UNIT
  - S251:METAL SWITCH·····················ON-OFF
  - S301:DOLBY NR SWITCH················ON-OFF
  - S451:LOUD SWITCH·······················ON-OFF

The underlined indicates the switch position.

15.CONNECTION DIAGRAM


1
2
3
4
5
6
A
B
C
D
MOTHER P.C. BOARD
IC, Q
Q513
Q509 Q510 IC251 Q815
IC551 Q816 Q802
Q253
Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506 Q505 Q507 Q803 Q801
IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
SDK P.C. BOARD
IC,Q IC701 IC702 Q703 Q701 Q702
Q704
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
CNP1830-B
IC501
IC801
8.5V
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
LCD
LOC
SEEK
MONO
SDK
SK
CH

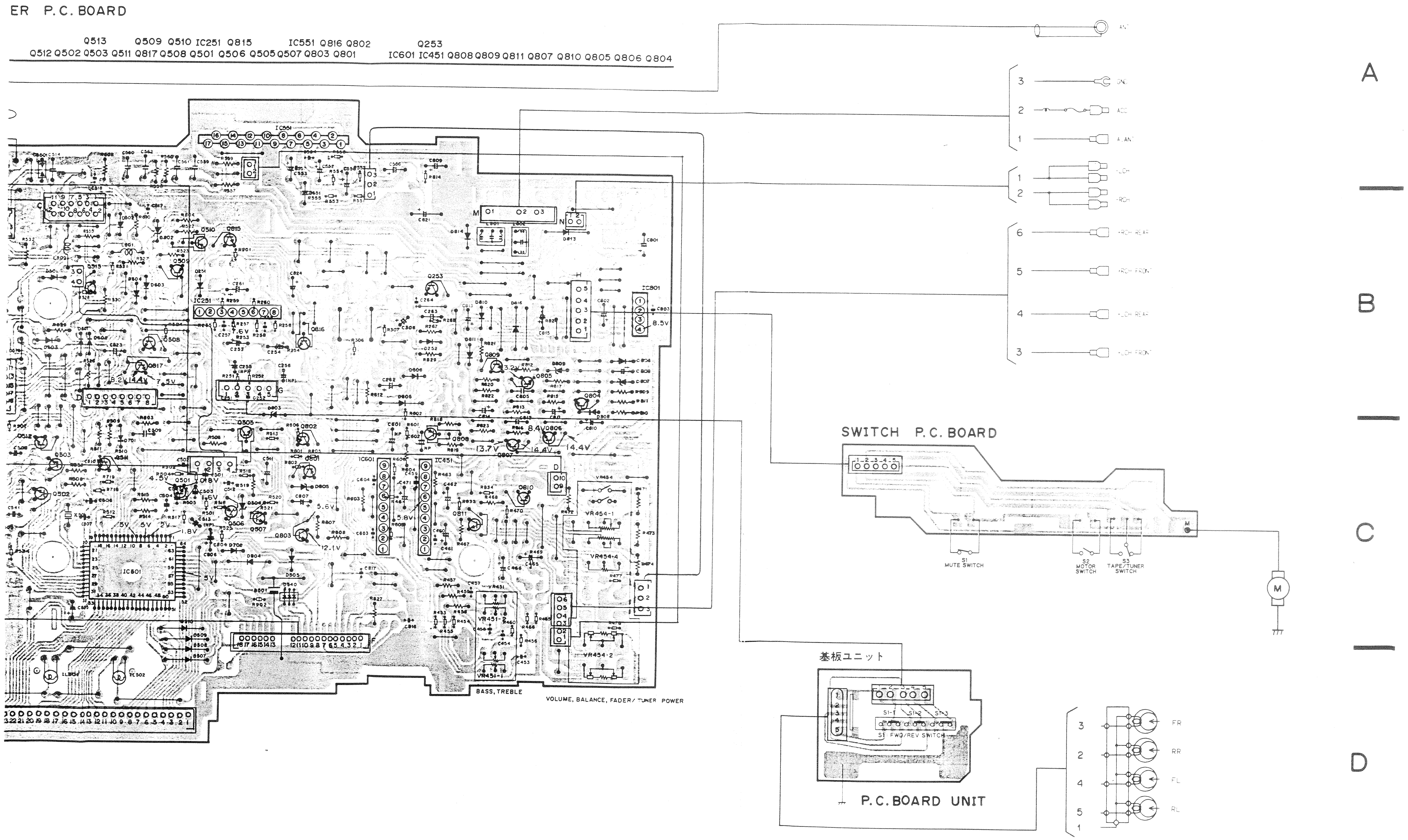
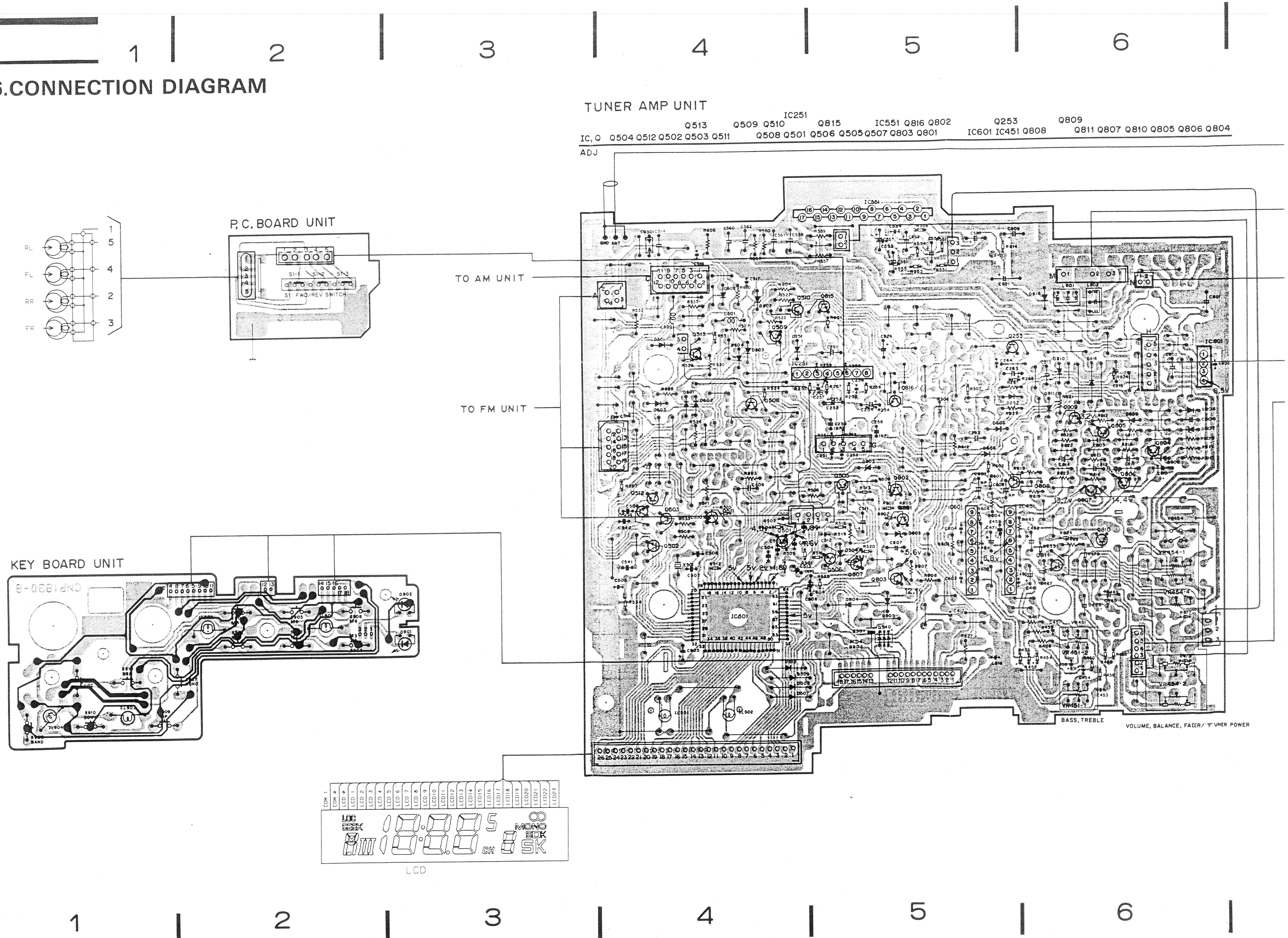

4
5
6
7
8
9
A
B
C
D
ER P.C. BOARD
Q513 Q509 Q510 IC251 Q815 IC551 Q816 Q802 Q253
Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
ANT
GND
ACC
A.ANT
+LCH
+RCH
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
IC551
IC251
IC601
IC451
IC801
IC801
8.5V
14.4V
13.7V
8.4V
12.1V
5.6V
5.8V
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
VR454-1
VR454-4
VR454-2
VR451-1
VR451-2
SWITCH P.C. BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M
基板ユニット
S1-1
S1-2
S1-3
S1 FWD/REV SWITCH
P.C. BOARD UNIT
FR
RR
FL
RL

Fig. 21

16.CONNECTION DIAGRAM


1
2
3
4
5
6
A
B
C
D
TUNER AMP UNIT
IC, Q Q504 Q512 Q502 Q513 Q503 Q511 Q509 Q510 Q508 Q501 IC251 Q815 Q506 Q505 IC551 Q816 Q802 Q507 Q803 Q801 Q253 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
ADJ
P.C. BOARD UNIT
S1 FWD/REV SWITCH
RL
FL
RR
FR
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
CNP1830-B
IC601
IC251
IC561
IC801
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
LOC
SEEK
MONO
SEEK
SK
CH
LCD

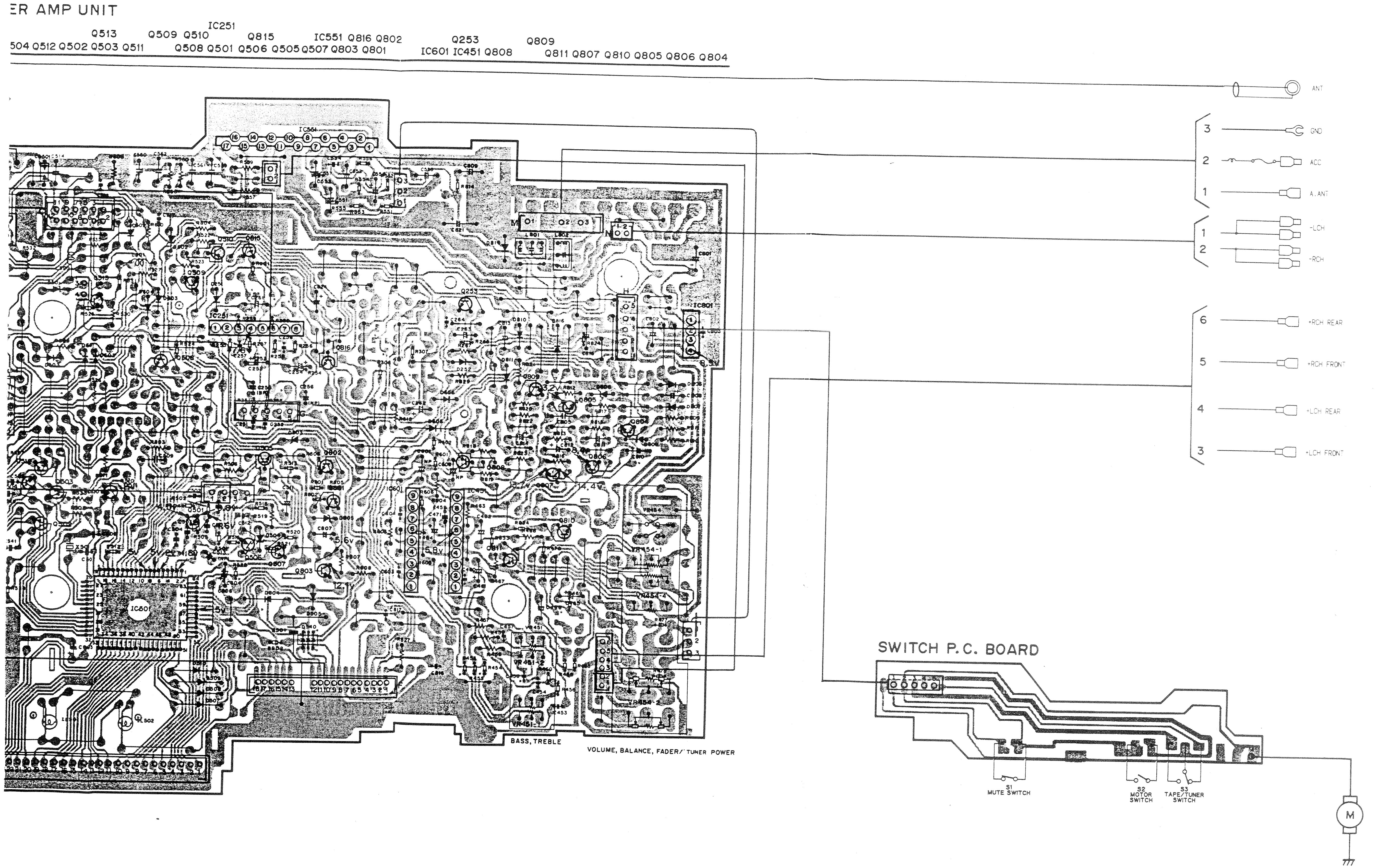

4
5
6
7
8
9
ER AMP UNIT
Q513 Q509 Q510 IC251 Q815 IC551 Q816 Q802 Q253 Q809
504 Q512 Q502 Q503 Q511 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC601 IC451 Q808 Q811 Q807 Q810 Q805 Q806 Q804
IC551
IC251
IC601
IC801
IC501
Q253
Q816
Q506
Q809
Q805
Q804
Q806
Q810
Q802
Q801
Q803
Q807
Q501
Q505
Q510
Q509
Q815
L801
L802
VR454-1
VR454-4
VR454-2
VR451-1
VR451-2
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
ANT
3
GND
2
ACC
1
A. ANT
1
-LCH
2
-RCH
6
+RCH REAR
5
+RCH FRONT
4
+LCH REAR
3
+LCH FRONT
SWITCH P.C. BOARD
S1
MUTE SWITCH
S2
MOTOR SWITCH
S3
TAPE/TUNER SWITCH
M
A
B
C
D
4
5
6
7
8
9

Fig. 22

17.SCHEMATIC CIRCUIT DIAGRAM

NOTE:

: Chip capacitor.

: Chip resistor.

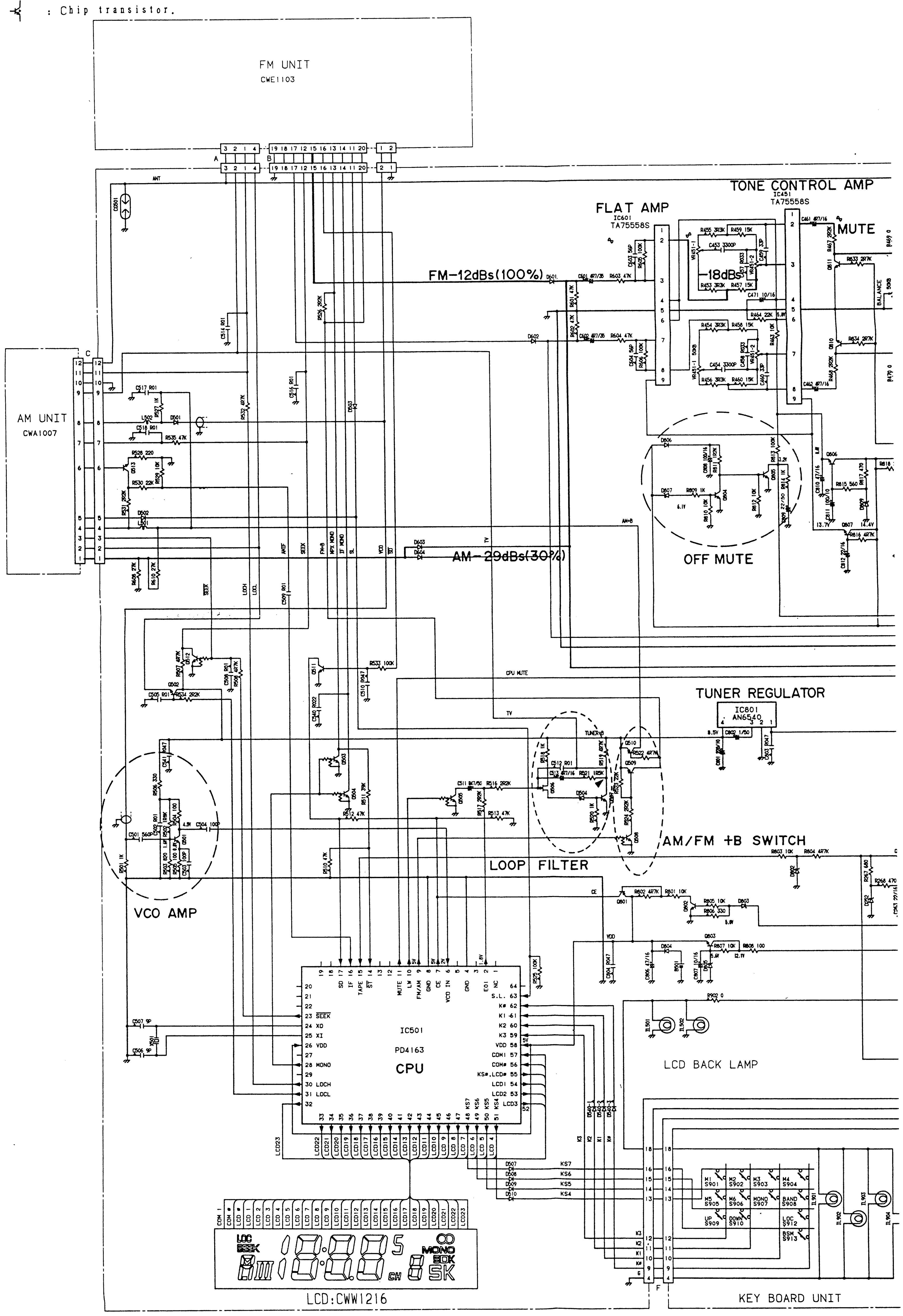
: Chip diode.

: Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:

2.2→2R2

0.022→R022



FM UNIT
CWE1103
AM UNIT
CWA1007
FLAT AMP
IC601
TA75558S
TONE CONTROL AMP
IC451
TA75558S
MUTE
FM-12dBs(100%)
AM-29dBs(30%)
-18dBs
BALANCE
OFF MUTE
TUNER REGULATOR
IC801
AN6540
LOOP FILTER
AM/FM +B SWITCH
VCO AMP
IC501
PD4163
CPU
LCD BACK LAMP
LCD:CWW1216
KEY BOARD UNIT
LOC
SEEK
MONO
ST
DX
CH
SK
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
LOC S912
BSM S913
ANT
SEEK
LOCH
LOCL
CPU MUTE
TV
TUNER+B
VDD
CE
KS7
KS6
KS5
KS4
K3
K2
K1
K#

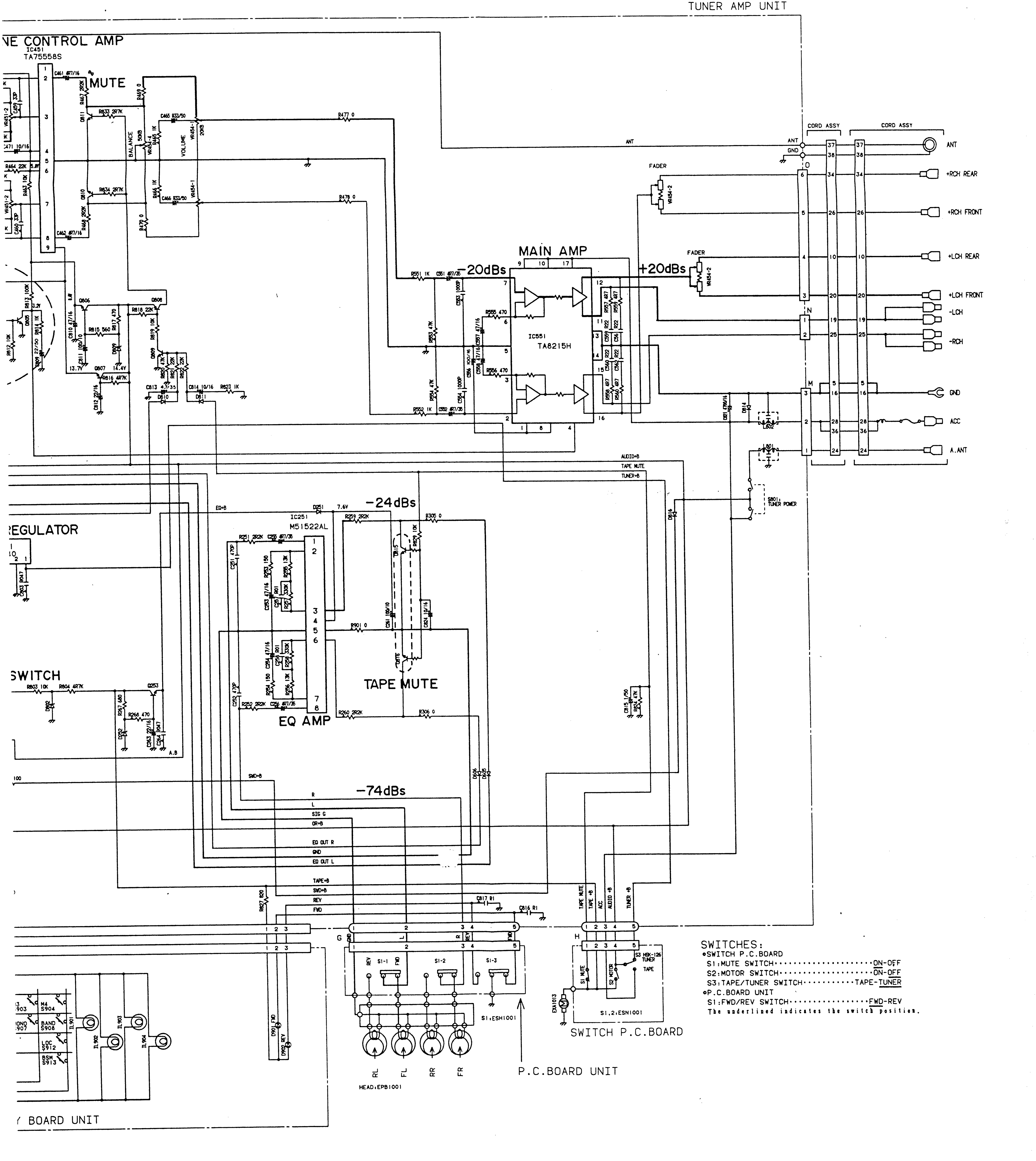
TUNER AMP UNIT

Q253,806,807	2SD1919
Q501	2SC2498
Q502	2SC4038
Q503,505,508,512	DTC144ES
Q504	DTC144EL
Q506	2SK330
Q507,802-805,809	2SC2458 (2SC1740S)
Q509,510	2SA1150
Q511,513	2SC3113
Q801,808	2SA1048
Q810,811	2SD1468S
Q815,816	DTC314TS
D251,502,503,601-604, 606,806,810,811	1SS133
D252	HZS9R1EB2 (RD9R1ESB2)
D501	1SS135

D50	HZS3R0EB2 (RD3R0ESB2)
D507-510,605,816	1S1555
D540	MA78-TR
D802	HZS5R1EB2 (RD5R1ESB2)
D803	HZS7R5EB2 (RD7R5ESB2)
D804	MA700
D805	HZS5R6JB2 (RD5R6JSB2)
D807	HZS8R2JB2 (RD8R2JSB2)
D809	HZS9R1EB2 (RD9R1ESB2)
D814	SM-3-02
IL501,502	CEL1025
VR451	CSS1114
VR454/S801	CCS1113

KEY BOARD UNIT

D901,902	SLR-320DU3LM
S901-910,912,913	CSG-253 (CSG1021)
IL901-904	CEL1025


TUNER AMP UNIT
NE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
VOLUME
ANT
GND
CORD ASSY
CORD ASSY
ANT
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
GND
ACC
A.ANT
FADER
FADER
MAIN AMP
-20dBs
+20dBs
IC551
TA8215H
AUDIO+B
TAPE MUTE
TUNER+B
S801: TUNER POWER
-24dBs
IC251
M51522AL
REGULATOR
SWITCH
TAPE MUTE
EQ AMP
-74dBs
R
L
SIG G
DR+B
ED OUT R
GND
ED OUT L
TAPE+B
SWD+B
REV
FWD
S1-1
S1-2
S1-3
S1:ESH1001
RL
FL
RR
FR
HEAD:EPB1001
P.C.BOARD UNIT
S1 MUTE
S2 MOTOR
S3 HSK-126
TUNER
TAPE
S1,2:ESN1001
EXA1013
SWITCH P.C.BOARD
M4
S904
BAND
S908
LOC
S912
BSM
S913
IL901
IL902
IL903
IL904
BOARD UNIT
5
6
7
8
9

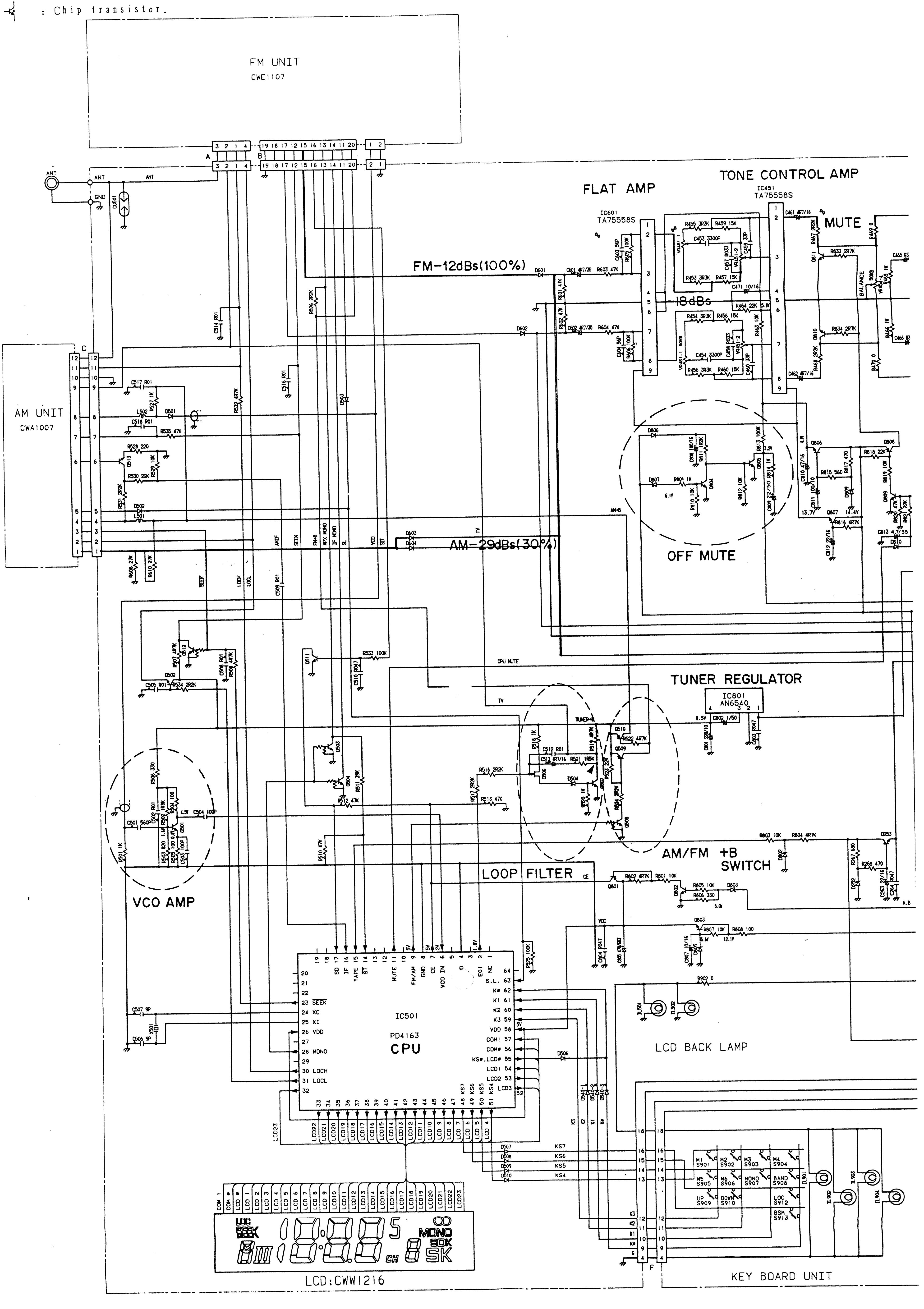
SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH······················ON-OFF
  - S2:MOTOR SWITCH······················ON-OFF
  - S3:TAPE/TUNER SWITCH············TAPE-TUNER
- P.C.BOARD UNIT
  - S1:FWD/REV SWITCH···················FWD-REV

The underlined indicates the switch position.

18.SCHEMATIC CIRCUIT DIAGRAM

NOTE:

: Chip capacitor. Decimal points for resistor and capacitor fixed values are expressed as:
: Chip resistor. 2.2→2R2
: Chip diode. 0.022→R022
: Chip transistor.


FM UNIT
CWE1107
ANT
GND
AM UNIT
CWA1007
FLAT AMP
IC601
TA75558S
TONE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
FM-12dBs(100%)
-18dBs
AM-29dBs(30%)
OFF MUTE
CPU MUTE
TUNER REGULATOR
IC801
AN6540
VCO AMP
LOOP FILTER
AM/FM +B SWITCH
IC501
PD4163
CPU
LCD BACK LAMP
LCD:CWW1216
KEY BOARD UNIT
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
LOC S912
BSM S913
LOC
SEEK
MONO
SK
CH

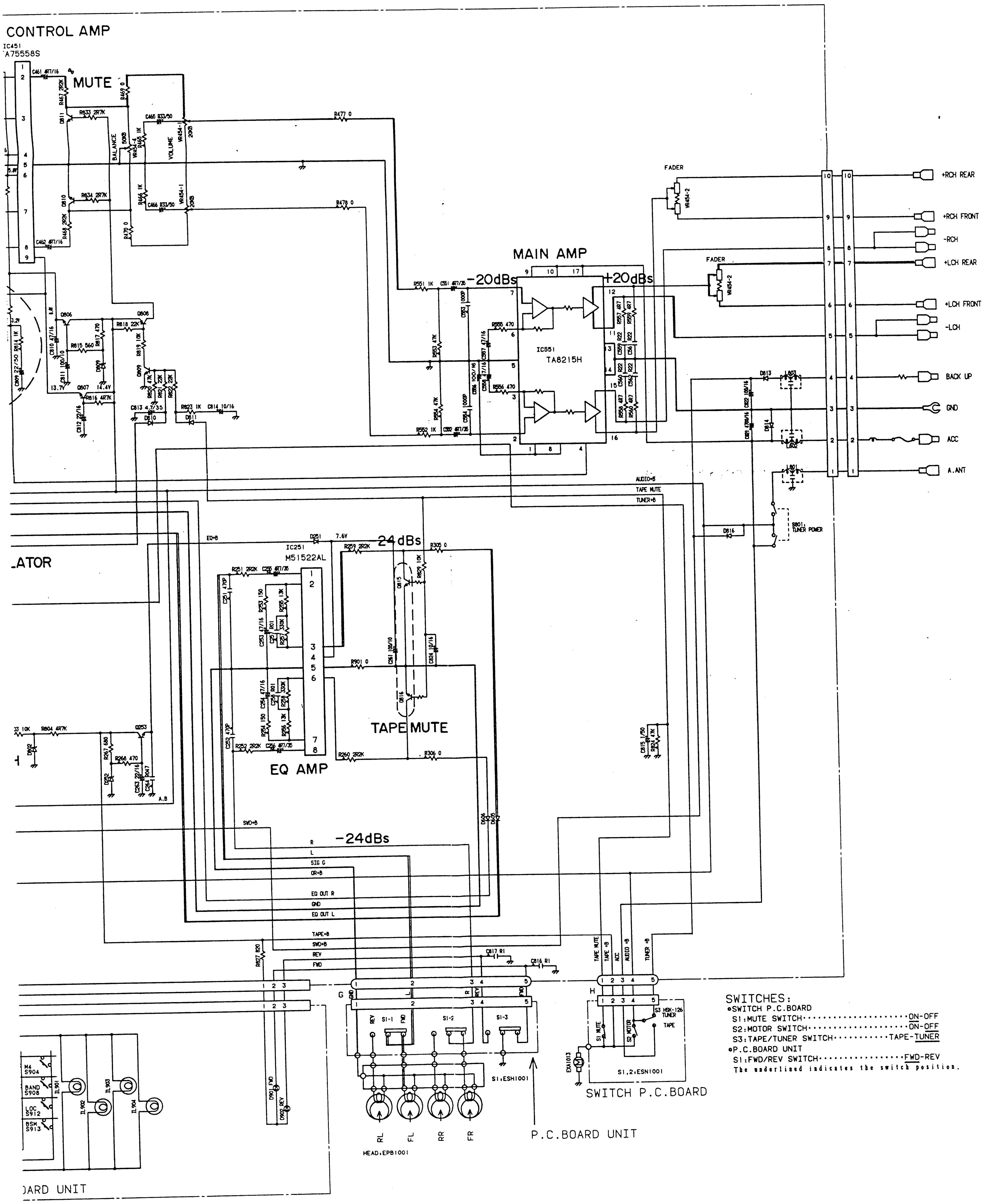
TUNER AMP UNIT

Q253,806,807	2SD1919
Q501	2SC2498
Q502	2SC4038
Q503,508,512	DTC144ES
Q504	DTC144EL
Q506	2SK330
Q507,802-805,809	2SC2458 (2SC1740S)
Q509,510	2SA1150
Q511,513	2SC3113
Q801,808	2SA1048
Q810,811	2SD1468S
Q815,816	DTC314TS
D251,502,503,506,601-604,606,806,810,811	1SS133
D252	HZS9R1EB2 (RD9R1ESB2)
D501	1SS135

D504	HZS3R0EB2 (RD3R0ESB2)
D507-510,605,813,816	1S1555
D540	MA78-TR
D802	HZS5R1EB2 (RD5R1ESB2)
D803	HZS7R5EB2 (RD7R5ESB2)
D805	HZS5R6JB2 (RD5R6JSB2)
D807	HZS8R2JB2 (RD8R2JSB2)
D809	HZS9R1EB2 (RD9R1ESB2)
D814	SM-3-02
IL501,502	CEL1025
VR451	CSS1114
VR454/S801	CCS1113

KEY BOARD UNIT

D901,902	SLR-320DU3LM
S901-910,912,913	CSG-253 (CSG1021)
IL901-904	CEL1025

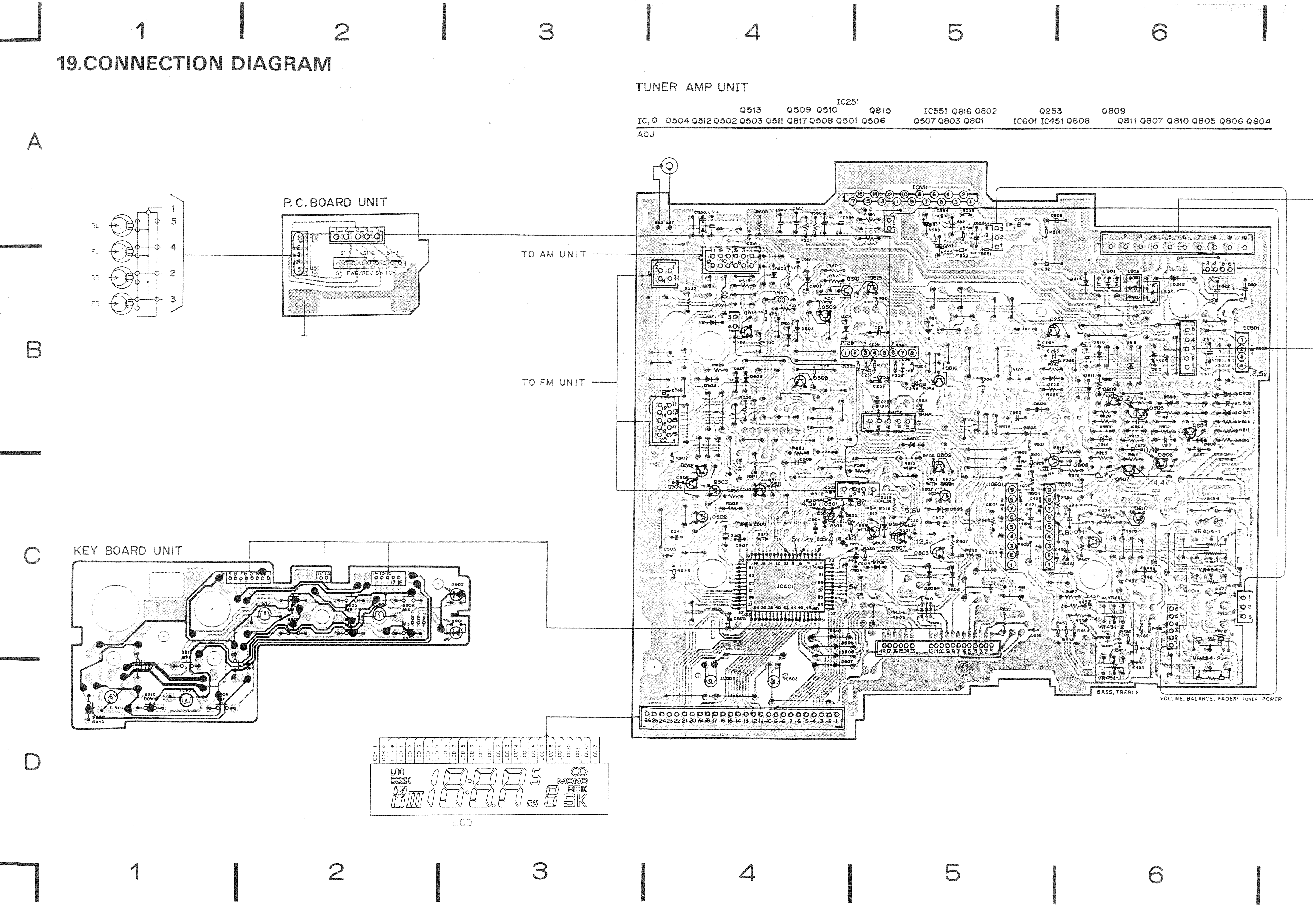

TUNER AMP UNIT
CONTROL AMP
IC451
A75558S
MUTE
BALANCE
VOLUME
VR454-1
FADER
VR454-2
MAIN AMP
-20dBs
+20dBs
IC551
TA8215H
+RCH REAR
+RCH FRONT
-RCH
+LCH REAR
+LCH FRONT
-LCH
BACK UP
GND
ACC
A.ANT
AUDIO+B
TAPE MUTE
TUNER+B
S801: TUNER POWER
ATOR
IC251
M51522AL
24dBs
EQ AMP
TAPE MUTE
-24dBs
R
L
SIG G
CR+B
EQ OUT R
GND
EQ OUT L
TAPE+B
SWD+B
REV
FWD
G
H
S1-1
S1-2
S1-3
S1:ESH1001
RL
FL
RR
FR
HEAD:EPB1001
P.C.BOARD UNIT
S3 MSK-126
TUNER
TAPE
S1 MUTE
S2 MOTOR
S1,2:ESN1001
EXA1013
SWITCH P.C.BOARD
M4 S904
BAND S908
LOC S912
BSM S913
IL901
IL902
IL903
IL904
D901 FWD
D902 REV
ARD UNIT

SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH……………………ON-OFF
  - S2:MOTOR SWITCH……………………ON-OFF
  - S3:TAPE/TUNER SWITCH…………TAPE-TUNER
- P.C.BOARD UNIT
  - S1:FWD/REV SWITCH………………FWD-REV

The underlined indicates the switch position.

Fig. 24

19.CONNECTION DIAGRAM


1
2
3
4
5
6
A
B
C
D
TUNER AMP UNIT
IC,Q Q504 Q512 Q502 Q513 Q503 Q511 Q509 Q817 Q510 Q508 IC251 Q501 Q815 Q506 IC551 Q507 Q816 Q803 Q802 Q801 IC601 Q253 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
ADJ
P.C. BOARD UNIT
S1: FWD/REV SWITCH
RL
FL
RR
FR
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
IC551
IC251
IC601
IC451
IC801
BASS, TREBLE
VOLUME, BALANCE, FADER/ TUNER POWER
COM 1
COM 0
LCD 0
LCD 1
LCD 2
LCD 3
LCD 4
LCD 5
LCD 6
LCD 7
LCD 8
LCD 9
LCD10
LCD11
LCD12
LCD13
LCD14
LCD15
LCD16
LCD17
LCD18
LCD19
LCD20
LCD21
LCD22
LOC
SEEK
MONO
SDK
CH
SK
LCD

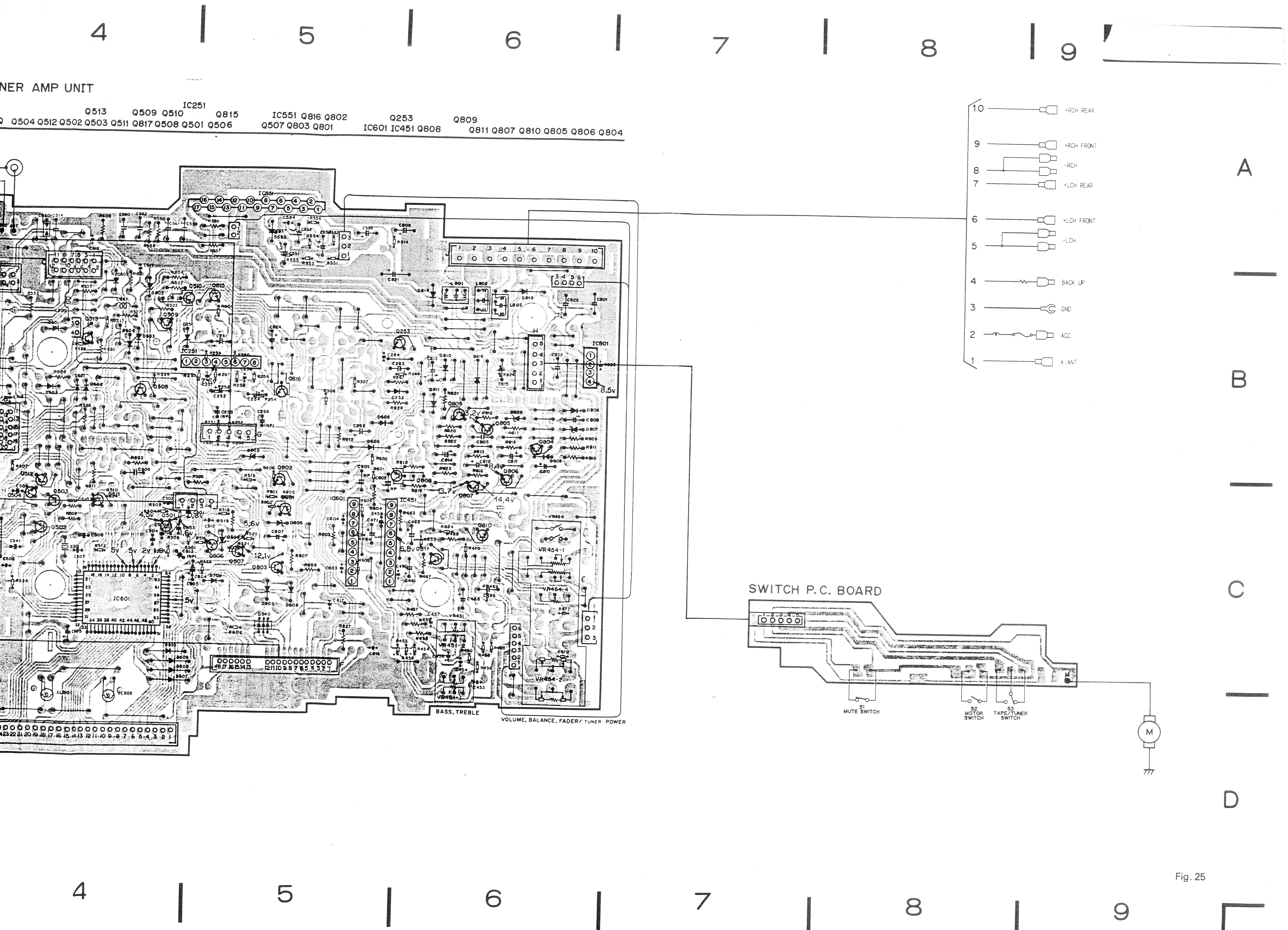

4
5
6
7
8
9
NER AMP UNIT
Q513 Q509 Q510 IC251 Q815
Q504 Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506
IC551 Q816 Q802
Q507 Q803 Q801
Q253
IC601 IC451 Q808
Q809
Q811 Q807 Q810 Q805 Q806 Q804
IC551
IC251
IC601
IC451
IC801
Q253
Q816
Q805
Q804
Q806
Q807
Q810
8.5v
3.2v
8.4v
14.4v
5.6v
12.1v
6.8v
VR454-1
VR454-4
VR454-2
VR451-1
VR451-2
BASS, TREBLE
VOLUME, BALANCE, FADER/ TUNER POWER
10 +RCH REAR
9 +RCH FRONT
8 -RCH
7 +LCH REAR
6 +LCH FRONT
5 -LCH
4 BACK UP
3 GND
2 ACC
1 A.ANT
SWITCH P.C. BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M
A
B
C
D

Fig. 25

20.CIRCUIT DIAGRAM AND P.C. BOARDS PATTERN

20.1 FM Unit (WG, EW)

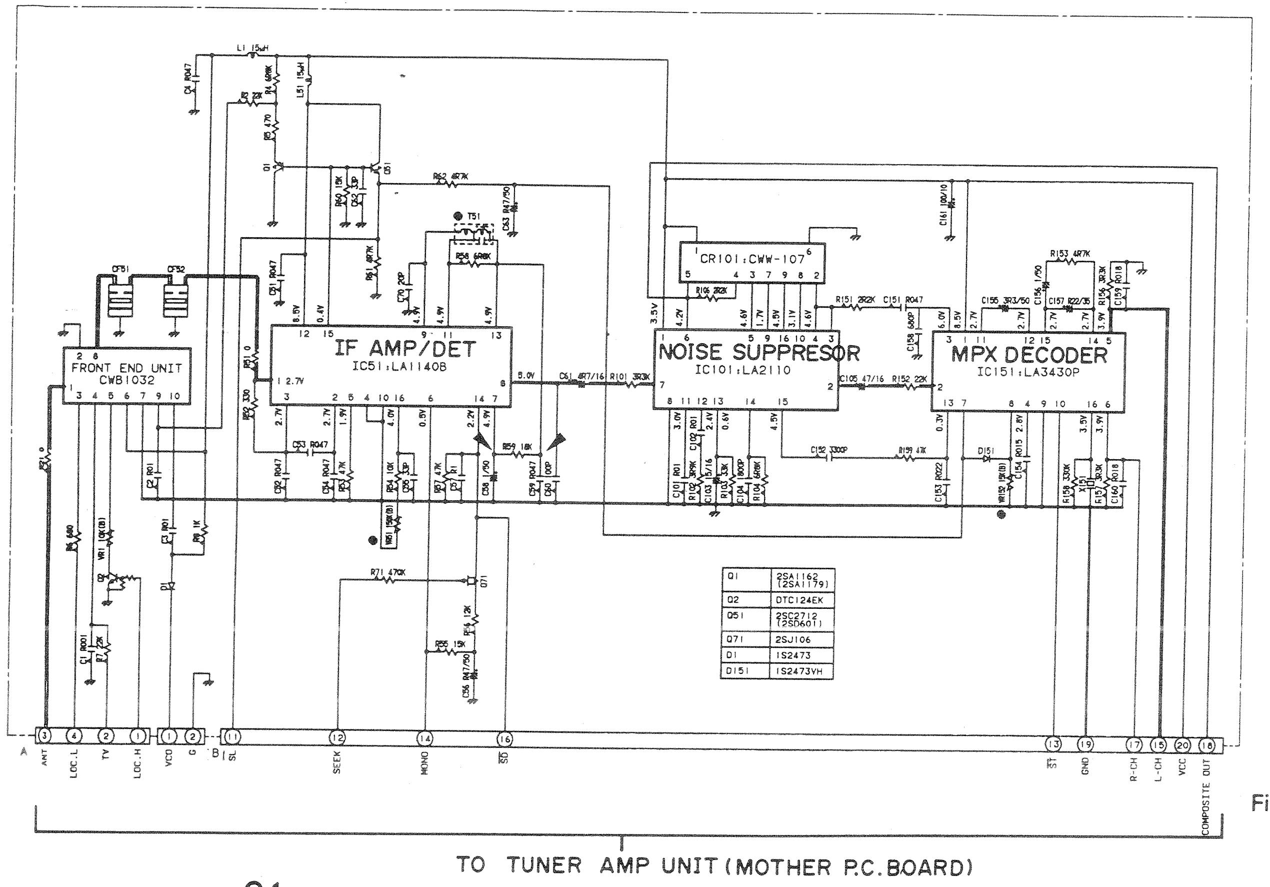

FRONT END UNIT
CWB1032
IF AMP/DET
IC51:LA1140B
CR101:CWW-107
NOISE SUPPRESOR
IC101:LA2110
MPX DECODER
IC151:LA3430P
Q1 2SA1162 (2SA1179)
Q2 DTC124EK
Q51 2SC2712 (2SD601)
Q71 2SJ106
D1 1S2473
D151 1S2473VH
ANT
LOC.L
TV
LOC.H
VCO
G
B
SL
SEEK
MONO
ST
GND
R-CH
L-CH
VCC
COMPOSITE OUT
TO TUNER AMP UNIT (MOTHER P.C.BOARD)

Fig. 26

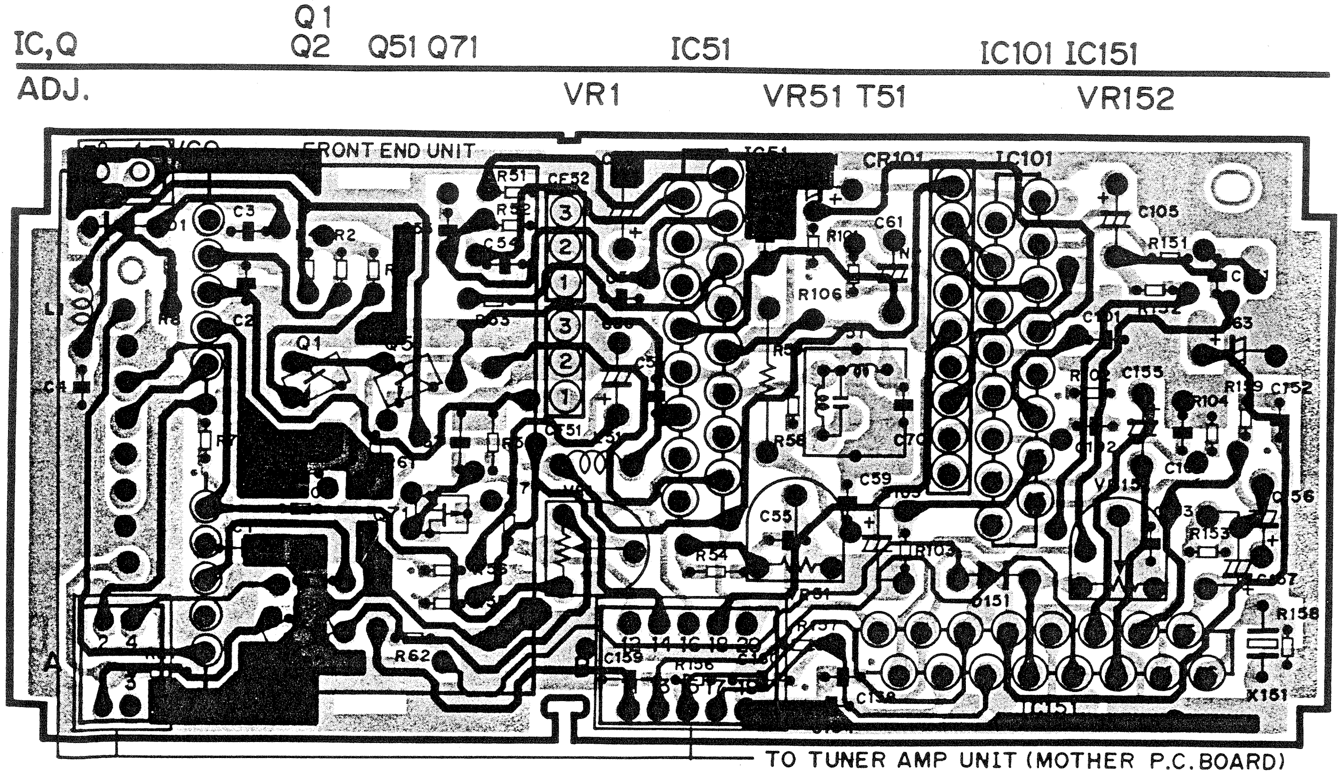

IC,Q
Q1
Q2
Q51 Q71
IC51
IC101 IC151
ADJ.
VR1
VR51 T51
VR152
FRONT END UNIT
CR101
IC101
IC151
Q1
C105
R151
R106
C155
R104
C152
C59
C55
R54
D151
R153
R158
X151
R62
C159
R156
A
B
TO TUNER AMP UNIT (MOTHER P.C.BOARD)

Fig. 27

20.2 FM Unit (ES)

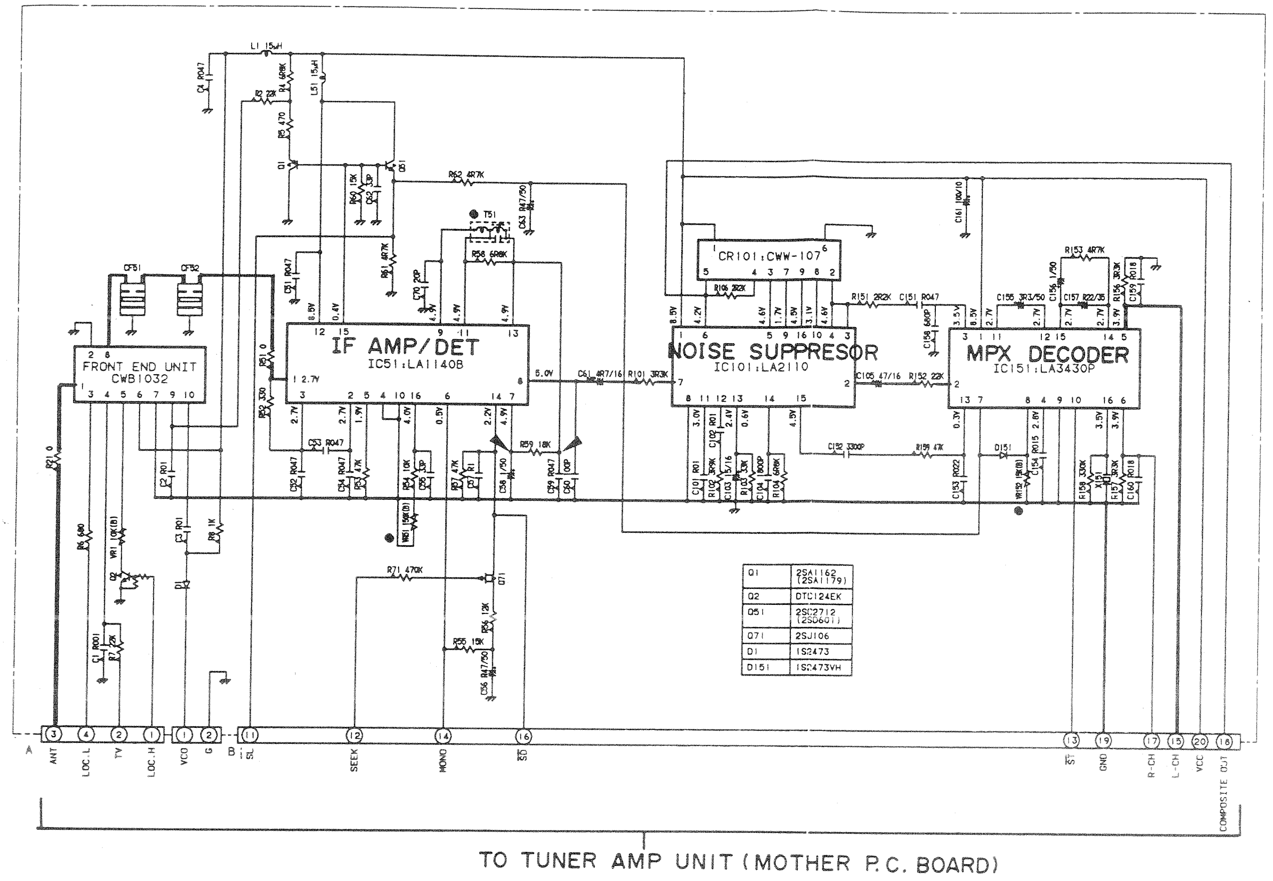

FRONT END UNIT
CWB1032
IF AMP/DET
IC51:LA1140B
CR101:CWW-107
NOISE SUPPRESOR
IC101:LA2110
MPX DECODER
IC151:LA3430P
Q1 2SA1162 (2SA1179)
Q2 DTC124EK
Q51 2SC2712 (2SD601)
Q71 2SJ106
D1 1S2473
D151 1S2473VH
ANT
LOC.L
TV
LOC.H
VCO
G
B
SL
SEEK
MONO
ST
GND
R-CH
L-CH
VCC
COMPOSITE OUT
TO TUNER AMP UNIT (MOTHER P.C. BOARD)

Fig. 28

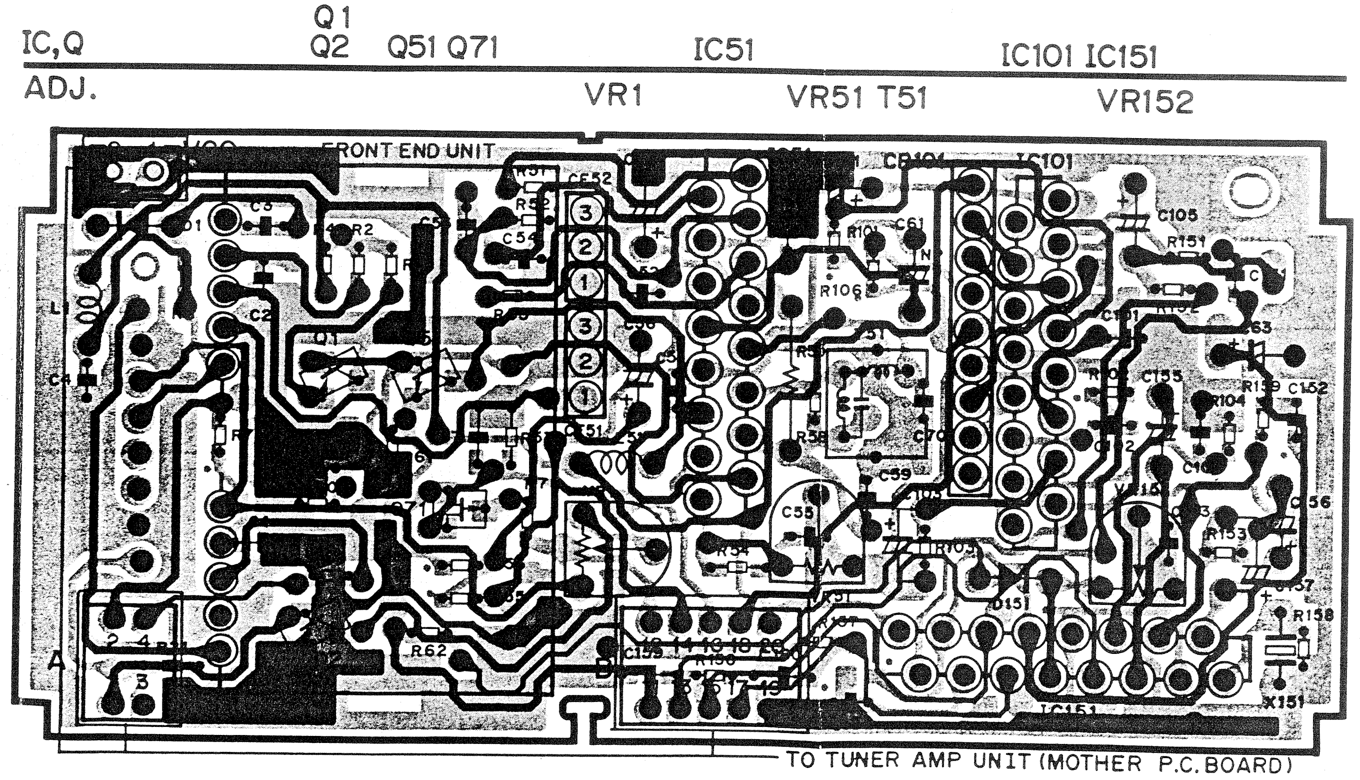
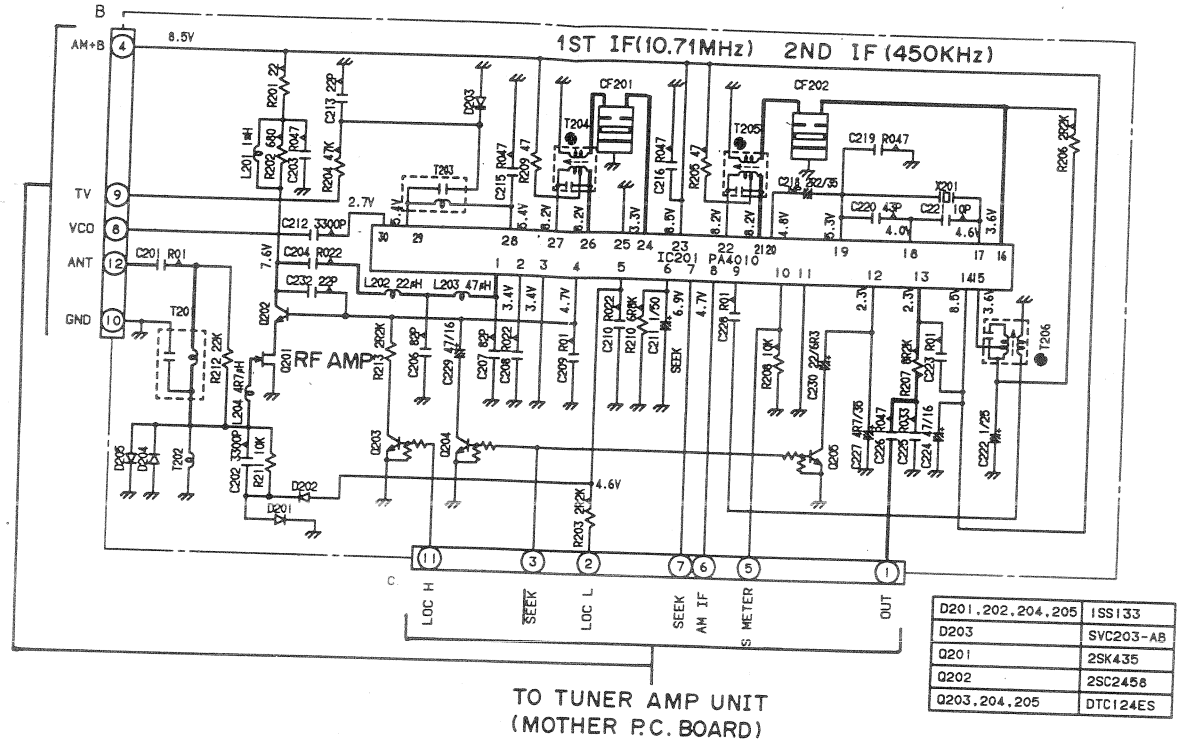

IC,Q
Q1
Q2
Q51 Q71
IC51
IC101 IC151
ADJ.
VR1
VR51 T51
VR152
FRONT END UNIT
CR101
IC101
IC151
Q1
C105
R151
R106
C155
R104
C152
C59
C55
R54
D151
R153
R158
X151
R62
A
B
TO TUNER AMP UNIT (MOTHER P.C.BOARD)

Fig. 29

20.3 AM Unit


1ST IF(10.71MHz) 2ND IF(450KHz)
B
AM+B
4
8.5V
TV
9
VCO
8
ANT
12
GND
10
C201 R01
T20
R212 22K
T202
D205
D204
C202 3300P
R21 10K
D202
D201
L204 4R7μH
Q201
RF AMP
Q202
7.6V
R201 22
L201 1mH
R202 680
C203 R047
R204 47K
C213 22P
C212 3300P
C204 R022
C232 22P
L202 22μH
L203 47μH
2.7V
T203
D203
C215 R047
R209 47
T204
CF201
C216 R047
R205 47
T205
CF202
C218 2R2/35
C219 R047
C220 43P
C221 10P
X201
R206 2R2K
T206
IC201 PA4010
R213 2R2K
C206 82P
C229 47/16
C207 82P
C208 R022
C209 R01
C210 R022
R210 6R8K
C211 1/50
C228 R01
R208 10K
C230 22/6R3
C227 4R7/35
C226 R047
C225 R033
C224 47/16
R207 8R2K
C223 R01
C222 1/25
Q203
Q204
Q205
R203 2R2K
4.6V
SEEK
11
3
2
7
6
5
1
C
LOC H
SEEK
LOC L
SEEK
AM IF
S METER
OUT
TO TUNER AMP UNIT
(MOTHER P.C. BOARD)

D201,202,204,205	1SS133
D203	SVC203-AB
Q201	2SK435
Q202	2SC2458
Q203,204,205	DTC124ES

Fig. 30

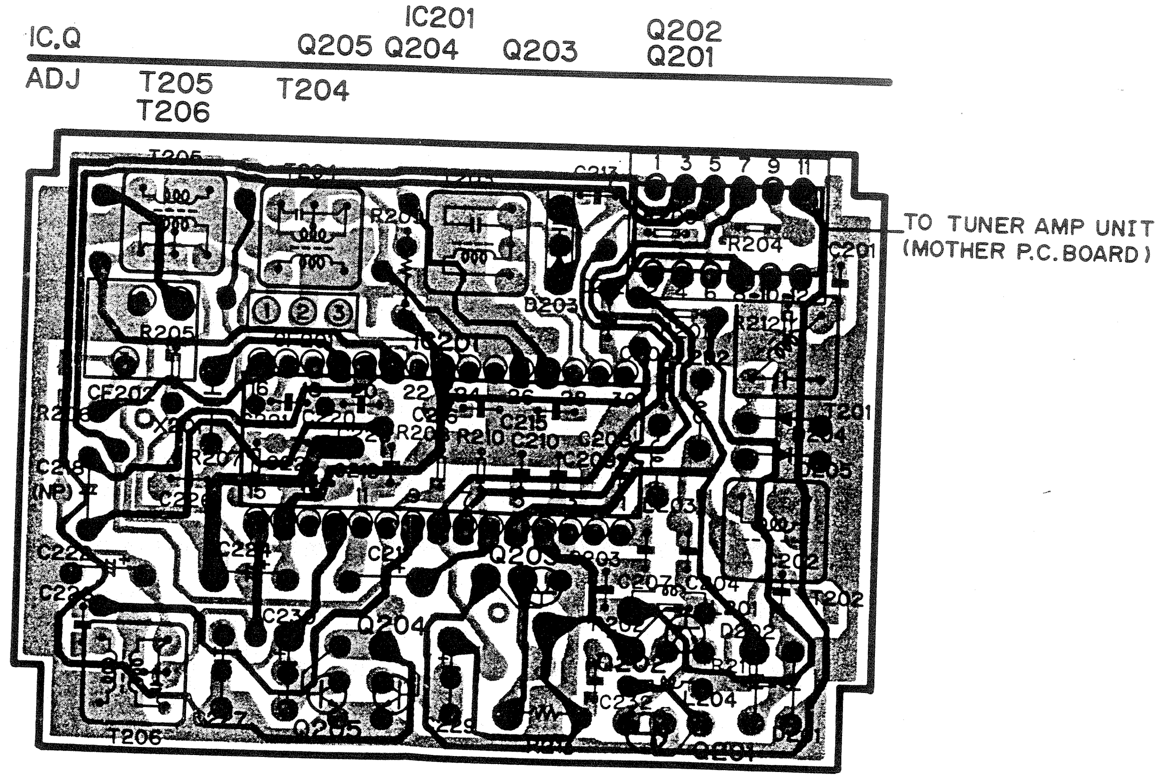
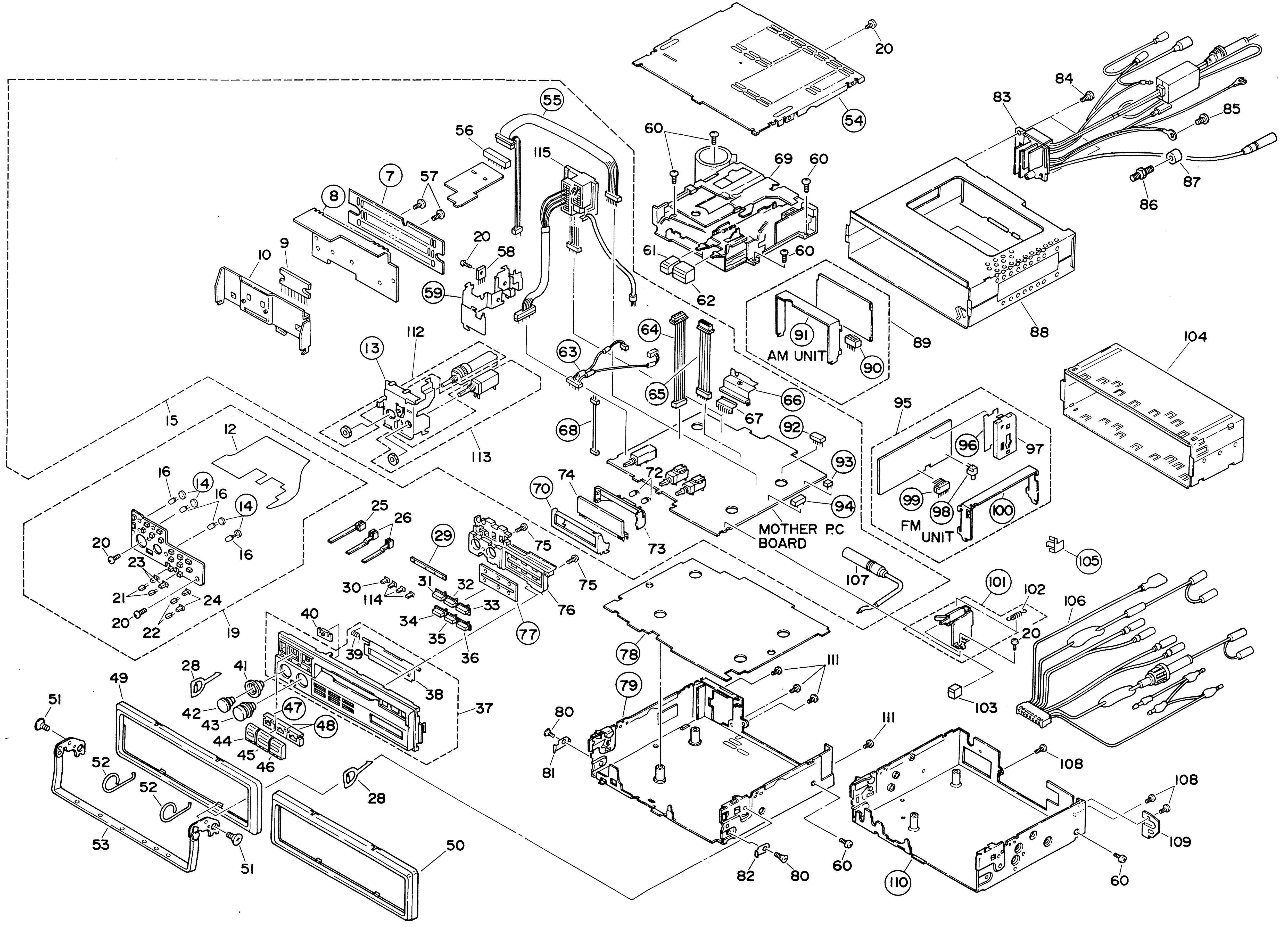

IC,Q
ADJ
IC201
Q205 Q204
Q203
Q202
Q201
T205
T206
T204
1 3 5 7 9 11
TO TUNER AMP UNIT
(MOTHER P.C. BOARD)
T205
T204
R204
C201
D203
R205
IC201
CF202
R212
T201
R207
R210
C210
C215
Q203
Q204
Q205
Q202
Q201
D202
T202
T206

Fig. 31

21.EXPLODED VIEW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AM UNIT
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MOTHER P.C
BOARD
99
98
100
FM
UNIT
105
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114
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Fig. 32

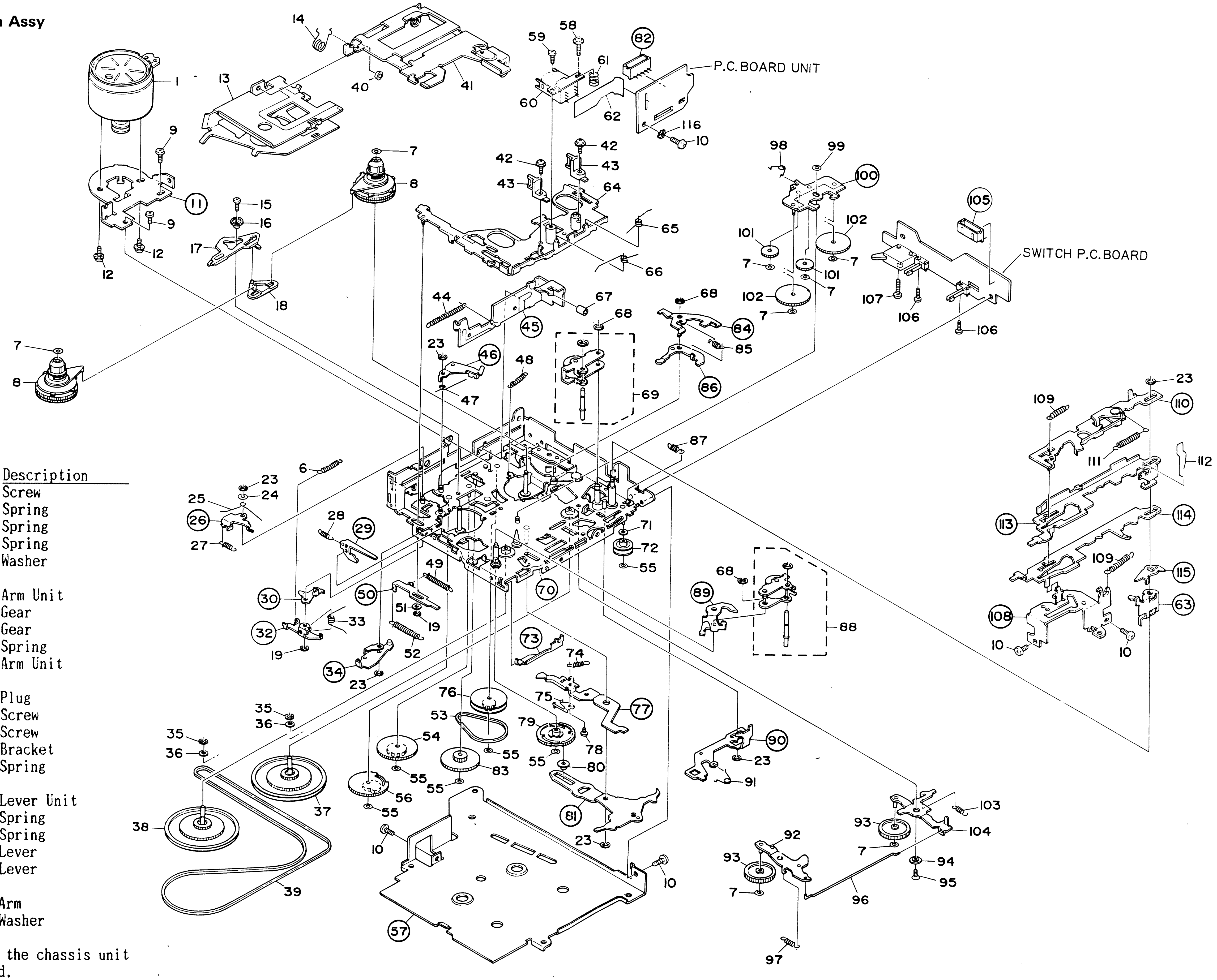
- **Parts List**

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Mark	No.	Part No.	Description
	1-6	.....	
	7		Plate(Except for 4070)
	8		Heat Sink
	9	TA8215H	IC
★★	10		Holder
	11	.....	
	12	CNP1831	P.C.Board
	13		Holder
	14		Spacer
◉	15	CWM1699	Tuner Amp Unit (5090SDK)
◉		CWM1700	Tuner Amp Unit (5090B)
◉		CWM1702	Tuner Amp Unit (5070QR)
◉		CWM1704	Tuner Amp Unit (4090SDK)
◉		CWM1705	Tuner Amp Unit (4090B, 4090)
◉		CWM1708	Tuner Amp Unit(4070)
★★	16	CEL1025	Lamp
	17	.....	
	18	.....	
◉	19	CWM1709	Key Board Unit (5090SDK)
◉		CWM1710	Key Board Unit (5090B, 5070QR)
◉		CWM1711	Key Board Unit (4090SDK)
◉		CWM1714	Key Board Unit (4090B, 4090, 4070)
	20	BMZ30P060FMC	Screw
★	21	SLR-320PG3KL	LED(5090 Series)
★	22	SLR-320DU3LM	LED
	23	CNV1801	Bush(5090 Series)
	24	CNV1801	Bush
	25	CAC1770	Button(LOUD) (5090 Series)
	26	CAC1769	Button(MTL, NR) (5090 Series)
	27	.....	
	28	CNC2346	Hook
	29		Cushion
★	30	CAC1767	Button(WG)
★	31	CAC1761	Button(1)
★	32	CAC1762	Button(2)
★	33	CAC1763	Button(3)
★	34	CAC1764	Button(4)
★	35	CAC1765	Button(5)
★	36	CAC1766	Button(6)
	37	CXA2320	Grille Unit(5090SDK)
		CXA2322	Grille Unit(5090B)
		CXA2324	Grille Unit(5070QR)
		CXA2325	Grille Unit(4090SDK)
		CXA2326	Grille Unit (4090B, 4090)
		CXA2328	Grille Unit(4070)
	38	CAT1139	Door(5090SDK, 5090B)
		CAT1153	Door(5070QR, 4070)
		CAT1151	Door(4090SDK, 4090B)
	39	CBH1129	Spring
	40		Escutcheon (4090 Series)
	41	CAA1144	Knob(FAD)
	42	CAA1143	Knob(VOLUME)
	43	CAA1145	Knob(BASS, TRE)
★	44	CAC1756	Button(BAND) (WG)
★		CAC1758	Button(BAND) (EW, ES)
★	45	CAC1759	Button(◁)
★	46	CAC1760	Button(▷)
	47		Cushion
	48		Cushion
	49	CNS1591	Panel(5090SDK, 5090B, 4090B)
		CNS1421	Panel(5070QR)
	50	CNS1403	Panel
	51	CMZ50P080FZK	Screw(5090SDK, 5090B, 5070QR, 4090B)
	52	CBH-865	Spring
	53	CXA2329	Handle Unit(5090SDK, 5090B, 5070QR, 4090B)
	54		Case Unit
	55		Connector(10P) (WG)
	56	CKS-574	Plug(10P) (WG)
	57	BMZ30P120FMC	Screw
★★	58	AN6540	IC
	59		Holder
	60	BMZ26P050FMC	Screw
★	61	CAC1778	Button(◁◁)
★	62	CAC1779	Button(▷▷)
	63		Connector(4P)
	64		Connector(5P)
	65		Connector(5P)
	66		Holder(4070)
	67	CKS-467	Plug(10P) (4070)
	68		Connector(2P)
◉	69	EXK1140	Cassette Mechanism Assy
	70		Holder
	71	.....	
★★	72	CEL1025	Lamp
	73	CNV1788	Holder
	74	CWW1216	LCD
	75	BPZ20P050FMC	Screw
	76	CNV1786	Lens
	77		Cushion
	78		Insulator
	79		Chassis Unit(5090SDK)
			Chassis Unit(5090B)
			Chassis Unit(5070QR)
			Chassis Unit (4090SDK, 4090B, 4090)
	80	CMZ30P050FMC	Screw
	81	CNC1775	Holder
	82	CNC1776	Holder
★	83	CDE1499	Cord Assy (Except for 4070)
	84	CBA1073	Screw(5090SDK, 5090B, 5070QR, 4090B)
	85	BMZ40P060FMC	Screw(5090SDK, 5090B, 5070QR, 4090B)
	86	CBA1002	Screw
	87	CNV1009	Bush
	88	CNB1221	Box(5090SDK, 5090B, 5070QR, 4090B)
◉	89	CWA1007	AM Unit
	90		Connctor(12P)
	91		Holder
	92		Plug(12P)
	93		Plug(4P)
	94		Plug(10P)
◉	95	CWE1103	FM Unit(WG, EW)
◉		CWE1107	FM Unit(ES)
	96		Insulator
	97	CWB1032	Front End
	98		Connctor(4P)
	99		Connctor(10P)
	100		Holder
	101		Lever Unit
	102	CBH1191	Spring
★	103	CAC1780	Button(◁ ▷)
	104	CNC1484	Holder(4090SDK, 4090, 4070)
	105		Spacer
★	106	CDE2088	Cord Assy(4070)
	107	CDH1066	Antenna Cable(4070)
	108	BMZ30P060FMC	Screw(4070)
	109	CNF-387	Clamper(4070)
	110		Chassis Unit(4070)
	111	BMZ30P080FMC	Screw (Except for 4070)
★★	112	CCS1113	Volume
★★	113	CCS1114	Volume
★	114	CAC1767	Button
★	115	CDE1941	Cord Assy (Except for 4070)

•Cassette Mechanism Assy



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P.C. BOARD UNIT
SWITCH P.C. BOARD
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Mark	No.	Part No.	Description
	95	HBA-212	Screw
	96	EBH1007	Spring
	97	EBH1006	Spring
	98	EBH1058	Spring
	99	EBF1005	Washer
	100		Arm Unit
	101	ENV1018	Gear
	102	ENV1017	Gear
	103	EBH1022	Spring
	104	EXA1005	Arm Unit
	105		Plug
	106	EBA1010	Screw
	107	BMZ20P070FMC	Screw
	108		Bracket
	109	EBH1016	Spring
	110		Lever Unit
	111	EBH1048	Spring
	112	EBH1005	Spring
	113		Lever
	114		Lever
	115		Arm
	116	WH23FMC	Washer

*)Number 92 is part of the chassis unit and cannot be removed.

Fig. 33

22.CASSETTE MECHANISM ASSY EXPLODED VIEW

- **Parts List**

Mark	No.	Part No.	Description
★★	1	EXA1013	Motor Unit
	2,3	.....	
	4,5	.....	
	6	EBH1056	Spring
	7	CBF-166	Washer
★★	8	EXA1012	Reel Unit
	9	BMZ23P030FMC	Screw
	10	BSZ23P040FMC	Screw
	11		Bracket
	12	PMS26P025FUC	Screw
	13	ENC1013	Cassette Holder
	14	EBH1019	Spring
	15	EBA1009	Screw
	16	ELA1042	Collar
	17	ENV1032	Arm
	18	ENV1031	Arm
	19	YE12FUC	Washer
	20-22	.....	
	23	YE15FUC	Washer
	24	CBF-165	Washer
	25	EBH1049	Spring
	26		Arm
	27	EBH1060	Spring
	28	EBH1066	Spring
	29		Arm
	30		Arm
	31	.....	
	32		Arm
	33	EBH1050	Spring
	34		Arm Unit
	35	CBG1001	Washer
	36	HBF-179	Washer
	37	ENV1029	Flywheel(N)
	38	ENV1030	Flywheel(R)
★★	39	ENT1003	Belt
	40	ELA1051	Roller
	41	EXA1014	Cassette Frame Unit
	42	PMS20P040FMC	Screw
	43	ENV1016	Tape Guide
	44	EBH1047	Spring
	45		Lever
	46		Arm
	47	EBH1040	Spring
	48	EBH1041	Spring
	49	EBH1021	Spring

Mark	No.	Part No.	Description
	50		Lever
	51	EBE1001	Washer
	52	EBH1009	Spring
★★	53	ENT1006	Belt
	54	ENV1034	Gear
	55	CBF-135	Washer
	56	ENV1037	Gear
	57		Cover
	58	EBA1013	Screw
	59	BMZ20P050FMC	Screw
★★	60	EPB1001	Head
	61	EBH1065	Spring
	62	ENP1003	P.C.Board
	63		Arm
	64	EXA1004	Head Base Unit
	65	EBH1004	Spring
	66	EBH1003	Spring
	67	CNV1667	Cushion
	68	YE20FUC	Washer
★★	69	EXA1002	Roller Unit
	70		Chassis Unit
	71	EBF1004	Washer
	72	ENV1009	Pulley
	73		Lever
	74	EBH1025	Spring
	75	EBL1001	Spring
	76	ENV1010	Pulley
	77		Arm
	78	HBA-147	Screw
	79	ENV1035	Gear
	80	ELA1018	Collar
	81		Arm
	82		Plug
	83	ENV1011	Gear
	84		Arm
	85	EBH1024	Spring
	86		Ratchet
	87	EBH1018	Spring
★★	88	EXA1003	Roller Unit
	89		Arm
	90		Lever
	91	EBH1013	Spring
	92	*	
	93	ENV1043	Gear
	94	ELA1032	Collar

23.ELECTRICAL PARTS LIST

NOTE:

- *For your parts Stock Control, the fast moving items are indicated with the marks ‡‡ and ‡.*
  ‡‡ : GENERALLY MOVES FASTER THAN ‡.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*
  Chip Resistor
  RS1/8S □□□J, RS1/10S □□□J
  Chip Capacitor (except for CQS.....)
  CKS....., CCS....., CSZS.....

Tuner Amp Unit (KEH-5090SDK)

Consists of
- ●Mother P.C.Board
- ●SDK P.C.Board

Unit Number :
Unit Name : Tuner Amp Unit

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
‡‡	IC 251		M51522AL
‡‡	IC 301		CXA1102P
‡‡	IC 451 601		TA75558S
‡‡	IC 501		PD4163
‡‡	IC 551		TA8215H
‡‡	IC 701	(WG)	KHA142
‡‡	IC 702	(WG)	TA75558S
‡‡	IC 801		AN6540
‡‡	Q 251 252		2SC2458 (2SC1740S)
‡‡	Q 253 806 807		2SD1919
‡‡	Q 501		2SC2498
‡‡	Q 502		2SC4038
‡‡	Q 503 508 512		DTC144ES
‡‡	Q 504	(EW ES)	DTC144EL
‡‡	Q 505	(WG EW)	DTC144ES
‡‡	Q 506		2SK330
‡‡	Q 507 802 803 804 805 809		2SC2458 (2SC1740S)
‡‡	Q 509 510		2SA1150
‡‡	Q 511 513		2SC3113
‡‡	Q 701 702 703 704	(WG)	2SC2458 (2SC1740S)
‡‡	Q 801 808		2SA1048
‡‡	Q 810 811		2SD1468S
‡‡	Q 815 816		DTC314TS
‡‡	Q 817	(WG)	2SD1864
‡	D 251		1SS133
‡	D 252		HZS9R1EB2 (RD9R1ESB2)
‡	D 501		1SS135
‡	D 502 503 601 602 603 604		1SS133
‡	D 504		HZS3R0EB2 (RD3R0ESB2)
‡	D 506	(ES)	1SS133
‡	D 507 508 509 510		1S1555
‡	D 540	Chip Diode	MA78-TR
‡	D 605		1S1555
‡	D 606		1SS133
‡	D 701 702	(WG)	1SS133
‡	D 802		HZS5R1EB2 (RD5R1ESB2)
‡	D 803		HZS7R5EB2 (RD7R5ESB2)
‡	D 804		MA700
‡	D 805		HZS5R6JB2 (RD5R6JSB2)
‡	D 806 810 811		1SS133
‡	D 807		HZS8R2JB2 (RD8R2JSB2)
‡	D 809		HZS9R1EB2 (RD9R1ESB2)
‡	D 814		SM-3-02
‡	D 816		1S1555
	L 501	Ferri-Inductor	CTF-157
	L 502	Ferri-Inductor	CTF1042
	L 801 802	EMI Filter	CCG1003
	X 501	Cristal Resonator	CSS1011
	X 701	(WG) Ceramic Resonator	CSS1019
‡‡	S 251 301	Switch	CSG-207
‡‡	S 451	Switch	CSG-207
‡‡	IL 501 502	Lamp 14V 40mA	CEL1025
‡‡	VR 301 302	Semi-fixed 33kΩ(B)	VRTB6VS333
‡‡	VR 451	Volume 20kΩ(B)×4	CCS1114
‡‡	VR 454/S801	Volume/Switch 200Ω×2 50kΩ(W)×1 20kΩ(B)×2	CCS1113
	CG501		DSP-201M-BF
		LCD	CAW1216

RESISTORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	R 251		RS1/10S222J
	R 252		RS1/8S222J
	R 253 254		RS1/10S181J
	R 255 256		RS1/10S133J
	R 257 258		RS1/10S334J
	R 259 260		RS1/10S222J
	R 261 262		RS1/10S104J
	R 263 264		RS1/10S332J
	R 265		RS1/10S102J
	R 266		RS1/8S473J
	R 267		RD1/4PS681JL
	R 268		RS1/10S471J
	R 269		RD1/4PS101JL
	R 303 304		RS1/10S103J
	R 305		RS1/8S433J
	R 306		RS1/8S273J
	R 307		RS1/10S273J
	R 453 454 455 456		RS1/10S332J
	R 457 458 459		RD1/4PS153JL
	R 460		RS1/10S153J
	R 463		RD1/4PS103JL
	R 464		RS1/10S223J
	R 465 466		RS1/10S102J
	R 467 468		RD1/4PS222JL
	R 469 470	(WG)	RS1/8S222J
	R 469 470	(EW ES)	RS1/8S0R0J
	R 471	(WG)	RD1/4PS271JL
	R 472 473	(WG)	RD1/4PS103JL
	R 474	(WG)	RD1/4PS1R8JL
	R 477 478 902		RS1/8S0R0J
	R 501		RS1/10S102J
	R 502		RS1/10S182J
	R 503		RS1/10S821J
	R 504 505		RS1/10S101J
	R 506		RD1/4PS331JL
	R 507 802		RS1/10S472J
	R 508		RD1/4PS472JL
	R 509 514 515	(WG)	RD1/4PS473JL
	R 510		RD1/4PS473JL
	R 511		RD1/4PS393JL
	R 512		RS1/10S473J
	R 513		RS1/8S473J
	R 516 517		RS1/10S222J
	R 518 520		RS1/10S102J
	R 519 522 532 804		RD1/4PS472JL
	R 521		RS1/10S152J
	R 523 530		RD1/4PS223JL
	R 524 531		RS1/10S222J
	R 525		RS1/10S104J
	R 526		RD1/4PS222JL
	R 527		RD1/4PS102JL
	R 528		RS1/8S221J
	R 529 803 807		RD1/4PS103JL
	R 533		RD1/4PS104JL
	R 534		RS1/8S222J
	R 535		RD1/4PS473JL
	R 551 552		RS1/10S102J
	R 553 554		RS1/10S473J
	R 555 556	(WG)	RS1/10S331J
	R 555 556	(EW ES)	RS1/10S471J
	R 557 558 559 560		RD1/4PS4R7JL
	R 601 602		RS1/10S473J
	R 603 604		RD1/4PS473JL
	R 605 606	(WG)	RS1/10S124J
	R 605 606	(EW ES)	RS1/10S104J
	R 608 610		RD1/4PS273JL
	R 611		RS1/8S682J
	R 612		RD1/4PS682JL
	R 701	(WG)	RD1/4PS473JL
	R 702	(WG)	RD1/4PS222JL
	R 703 704	(WG)	RD1/4PS472JL
	R 705	(WG)	RD1/4PS273JL
	R 706 709	(WG)	RD1/4PS222JL
	R 707 708 714	(WG)	RD1/4PS104JL
	R 710	(WG)	RD1/4PS563JL
	R 711	(WG)	RD1/4PS333JL
	R 712	(WG)	RD1/4PS223JL
	R 713	(WG)	RD1/4PS473JL
	R 715	(WG)	RS1/8S221J
	R 716	(WG)	RD1/4PS102JL
	R 717	(WG)	RD1/4PS122JL
	R 718	(WG)	RS1/10S473J
	R 719	(WG)	RS1/10S393J
	R 801 805		RS1/10S103J
	R 806		RS1/10S331J
	R 808		RD1/4PS101JL
	R 809 823		RD1/4PS102JL
	R 810 812 819		RD1/4PS103JL
	R 811		RD1/4PS122JL
	R 813		RD1/4PS104JL
	R 814		RS1/8S102J
	R 815		RD1/4PS561JL
	R 816		RD1/4PS472JL
	R 817		RD1/4PS471JL
	R 818 821 822		RD1/4PS223JL
	R 820		RD1/4PS473JL
	R 824		RS1/8S473J
	R 825 826		RD1/4PS821JL
	R 827		RD1/4PS821JL
	R 829		RD1/4PS103JL
	R 830	(WG)	RS1/10S471J
	R 833 834		RS1/8S272J
	R 901		RS1/10S0R0J

CAPACITORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	C 251 252		CKSQYB471K50
	C 253 254		CEA470M16LS
	C 255 256		CEANL4R7M35LL
	C 257 258		CKSQYB103K50
	C 259 260		CKSQYB223K50
	C 261		CEA101M10LS
	C 262		CEA220M16LS
	C 263		CEA220M16LS
	C 264		CKSQYF473Z50
	C 265		CKSQYF473Z50
	C 301 302		CEA010M50LS2
	C 305		CEA470M16LS
	C 306		CEA101M10LL
	C 308 309		CEAR68M50LS2
	C 453 454		CKSQYB332K50

Mark	Circuit Symbol & No.	Part Name	Part No.
	C 457 458		CKSQYF333Z50
	C 459 460	(WG)	CCSQCH470J50
	C 459 460	(EW ES)	CCSQCH330J50
	C 461 462		CEA4R7M35LS
	C 463 464		CKSQYB272K50
	C 465 466		CEAR33M50LS2
	C 471		CEA100M16LS2
	C 501		CKSQYB561K50
	C 502 508 512 517 518		CKSQYB103K50
	C 503 504		CCSQCH101J50
	C 505 516		CKSYB103K50
	C 506		CCSQCH090D50
	C 507		CCSCH090D50
	C 509 514		CKPYY103M16L
	C 510		CKSQYF473Z50
	C 511	(WG EW)	CEAR47M50LS2
	C 513	4.7μF/16V	CCH1005
	C 540	(EW)	CKSYF223Z50
	C 541		CKQYF473Z50
	C 551 552		CEHAQ4R7M50
	C 553		CKSQYB102K50
	C 554		CKSYB102K50
	C 556		CEHAQ101M16
	C 557 558		CEHAQ470M25
	C 559 560 561 562		CQEA224J63
	C 601 602		CEALNP4R7M16
	C 603 604	(WG)	CCSQCH470J50
	C 603 604	(EW ES)	CCSQCH560J50
	C 605 606		CEA100M16LS2
	C 701 823	(WG)	CEA220M16LS
	C 702	(WG)	CKSQYB103K50
	C 703	(WG)	CEAR33M50L2
	C 704	(WG)	CQMA683J50LL
	C 705 717	(WG)	CEA470M16L2
	C 706 713	(WG)	CEA4R7M25L2
	C 707	(WG)	CKSQYF333Z50
	C 708	(WG)	CKSQYB102K50
	C 709	(WG)	CEA220M16L2
	C 710	(WG)	CCSQCH471J50
	C 711	(WG)	CEA4R7M35LS
	C 712	(WG)	CEAR47M50L2
	C 714	(WG)	CKSQYB223K50
	C 715	(WG)	CCSQCH471J50
	C 716	(WG)	CEA221M10L2
	C 777	(WG)	CKSYF473Z50
	C 801		CEA221M10L2
	C 802		CEA010M50L2
	C 803		CKSYF473Z50
	C 804		CKSYF473Z50
	C 806		CEA470M16LS
	C 807		CEA100M16LS2
	C 808 811		CEA101M16L2
	C 809		CEHAQ220M50
	C 810		CEA470M16L2
	C 812		CEA220M16L2
	C 813		CEA4R7M35LS
	C 814		CEA100M16LS2
	C 815		CEA010M50LS2
	C 816 817		CKSQYF104Z25
	C 821		CEHAQ472M16
	C 824		CEA100M16LS2

Tuner Amp Unit (KEH-4090SDK)

Consists of
- ●Mother P.C.Board
- ●SDK P.C.Board

Unit Number :
Unit Name : Tuner Amp Unit

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
‡‡	IC 251		M51522AL
‡‡	IC 451 601		TA75558S
‡‡	IC 501		PD4163
‡‡	IC 551		TA8215H
‡‡	IC 701	(WG)	KHA142
‡‡	IC 702	(WG)	TA75558S
‡‡	IC 801		AN6540
‡‡	Q 253 806 807		2SD1919
‡‡	Q 501		2SC2498
‡‡	Q 502		2SC4038
‡‡	Q 503 508 512		DTC144ES
‡‡	Q 504	(EW ES)	DTC144EL
‡‡	Q 505	(WG EW)	DTC144ES
‡‡	Q 506		2SK330
‡‡	Q 507 802 803 804 805 809		2SC2458 (2SC1740S)
‡‡	Q 509 510		2SA1150
‡‡	Q 511 513		2SC3113
‡‡	Q 701 702 703 704	(WG)	2SC2458 (2SC1740S)
‡‡	Q 801 808		2SA1048
‡‡	Q 810 811		2SD1468S
‡‡	Q 815 816		DTC314TS
‡‡	Q 817	(WG)	2SD1864
‡	D 251		1SS133
‡	D 252		HZS9R1EB2 (RD9R1ESB2)
‡	D 501		1SS135
‡	D 502 503 601 602 603 604		1SS133
‡	D 504		HZS3R0EB2 (RD3R0ESB2)
‡	D 506	(ES)	1SS133
‡	D 507 508 509 510		1S1555
‡	D 540	Chip Diode	MA78-TR
‡	D 605		1S1555
‡	D 606		1SS133
‡	D 701 702	(WG)	1SS133
‡	D 802		HZS5R1EB2 (RD5R1ESB2)
‡	D 803		HZS7R5EB2 (RD7R5ESB2)
‡	D 804	(WG EW)	MA700
‡	D 805		HZS5R6JB2 (RD5R6JSB2)
‡	D 806 810 811		1SS133
‡	D 807		HZS8R2JB2 (RD8R2JSB2)
‡	D 809		HZS9R1EB2 (RD9R1ESB2)
‡	D 813	(ES)	1S1555

CAPACITORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	C 251 252		CKSQYB471K50
	C 253 254		CEA470M16LS
	C 255 256		CEANL4R7M35LL
	C 257 258		CKSQYB103K50
	C 261		CEA101M10LS
	C 263		CEA220M16LS
	C 264		CKSQYF473Z50
	C 453 454		CKSQYB332K50
	C 457 458		CKSQYF333Z50
	C 459 460	(WG)	CCSQCH470J50
	C 459 460	(EW ES)	CCSQCH330J50
	C 461 462		CEA4R7M35LS
	C 465 466		CEAR33M50LS2
	C 471		CEA100M16LS2
	C 501		CKSQYB561K50
	C 502 508 512 517 518		CKSQYB103K50
	C 503 504		CCSQCH101J50
	C 505 516		CKSYB103K50
	C 506		CCSQCH090D50
	C 507		CCSCH090D50
	C 509 514		CKPYY103M16L
	C 510		CKSQYF473Z50
	C 511	(WG EW)	CEAR47M50LS2
	C 513	4.7μF/16V	CCH1005
	C 540	(EW)	CKSYF223Z50
	C 541		CCSQYF473Z50
	C 551 552		CEHAQ4R7M50
	C 553		CKSQYB102K50
	C 554		CKSYB102K50
	C 556		CEHAQ101M16
	C 557 558		CEHAQ470M25
	C 559 560 561 562		CQEA224J63
	C 601 602		CEALNP4R7M16
	C 603 604	(WG)	CCSQCH470J50
	C 603 604	(EW ES)	CCSQCH560J50
	C 701 823	(WG)	CEA220M16LS
	C 702	(WG)	CKSQYB103K50
	C 703	(WG)	CEAR33M50L2
	C 704	(WG)	CQMA683J50LL
	C 705 717	(WG)	CEA470M16L2
	C 706 713	(WG)	CEA4R7M25L2
	C 707	(WG)	CKSQYF333Z50
	C 708	(WG)	CKSQYB102K50
	C 709	(WG)	CEA220M16L2
	C 710	(WG)	CCSQCH471J50
	C 711	(WG)	CEA4R7M35LS
	C 712	(WG)	CEAR47M50L2
	C 714	(WG)	CKSQYB223K50
	C 715	(WG)	CCSQCH471J50
	C 716	(WG)	CEA221M10L2
	C 777	(WG)	CKSYF473Z50
	C 801		CEA221M10L2
	C 802		CEA010M50L2
	C 803		CKSYF473Z50
	C 804		CKSYF473Z50
	C 805	(ES)	CCH1013
	C 806	(WG EW)	CEA470M16LS
	C 807		CEA100M16LS2
	C 808 811		CEA101M16L2
	C 809		CEHAQ220M50
	C 810		CEA470M16L2
	C 812		CEA220M16L2
	C 813		CEA4R7M35LS
	C 814		CEA100M16LS2
	C 815		CEA010M50LS2
	C 816 817		CKSQYF104Z25
	C 821		CEHAQ472M16
	C 822	(ES)	CEA101M16L2
	C 824		CEA100M16LS2

Unit Number :
Unit Name : AM UNIT

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
‡‡	IC 201		PA4010
‡‡	Q 201		2SK435
‡‡	Q 202		2SC2458
‡‡	Q 203 204 205		DTC124ES
‡	D 201 202		1S2473VH
‡	D 203	Variable Capacitance Diode	SVC203-AB
‡	D 204 205		1SS133
	L 201	Ferri-Inductor	CTF1026
	L 202	Ferri-Inductor	LAU220K
	L 203	Ferri-Inductor	LAU470K
	L 204	Ferri-Inductor	LAU4R7K
	T 201	Coil	CTB1020
	T 202	Coil	CTB1004
	T 203	Coil	CTB1022 (CTB1021)
	T 204	Coil	CTE1013 (CTE1006)
	T 205	Coil	CTE1014 (CTE1007)
	T 206	Coil	CTE1015 (CTE1008)
	CF 201	Filter	CTF1027 (CTF1041)
	CF 202	Filter	CTF-100
	X 201	Cristal Resonator	CSS1014

RESISTORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	R 201		RS1/10S220J
	R 202		RS1/10S681J
	R 203 206		RS1/10S222J
	R 204		RS1/10S473J
	R 205		RS1/10S470J
	R 207		RS1/10S822J
	R 208 211		RS1/10S103J
	R 209		RD1/4PS470JL
	R 210		RS1/10S682J
	R 212		RS1/8S223J
	R 213		RD1/4PS222JL

Mark	Circuit Symbol & No.	Part Name	Part No.
‡	D 814		SM-3-02
‡	D 816		1S1555
	L 501	Ferri-Inductor	CTF-157
	L 502	Ferri-Inductor	CTF1042
	L 801 802	EMI Filter	CCG1003
	L 803	(ES) EMI Filter	CCG1003
	X 501	Cristal Resonator	CSS1011
	X 701	(WG) Ceramic Resonator	CSS1019
‡‡	IL 501 502	Lamp 14V 40mA	CEL1025
‡‡	VR 451	Volume 20kΩ(B)×4	CCS1114
‡‡	VR 454/S801	Volume/Switch 200Ω×2 50kΩ(W)×1 20kΩ(B)×2	CCS1113
	CG501		DSP-201M-BF
		LCD	CWW1216

RESISTORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	R 251		RS1/10S222J
	R 252		RS1/8S222J
	R 253 254		RS1/10S151J
	R 255 256		RS1/10S133J
	R 257 258		RS1/10S334J
	R 259 260		RS1/10S222J
	R 267		RD1/4PS681JL
	R 268		RS1/10S471J
	R 306		RS1/8S0R0J
	R 307		RS1/10S0R0J
	R 453 454 455 456		RS1/10S332J
	R 457 458 459		RD1/4PS153JL
	R 460		RS1/10S153J
	R 463		RD1/4PS103JL
	R 464		RS1/10S223J
	R 465 466		RS1/10S102J
	R 467 468		RD1/4PS222JL
	R 469 470	(WG)	RS1/8S222J
	R 469 470	(EW ES)	RS1/8S0R0J
	R 471	(WG)	RD1/4PS271JL
	R 472 473	(WG)	RD1/4PS103JL
	R 474	(WG)	RD1/4PS1R8JL
	R 477 478 902		RS1/8S0R0J
	R 501		RS1/10S102J
	R 502		RS1/10S182J
	R 503		RS1/10S821J
	R 504 505		RS1/10S101J
	R 506		RD1/4PS331JL
	R 507 802		RS1/10S472J
	R 508		RD1/4PS472JL
	R 509 514 515	(WG)	RD1/4PS473JL
	R 510		RD1/4PS473JL
	R 511		RD1/4PS393JL
	R 512		RS1/10S473J
	R 513		RS1/8S473J
	R 516 517		RS1/10S222J
	R 518 520		RS1/10S102J
	R 519 522 532 804		RD1/4PS472JL
	R 521		RS1/10S152J
	R 523 530		RD1/4PS223JL
	R 524 531		RS1/10S222J
	R 525		RS1/10S104J
	R 526		RD1/4PS222JL
	R 527		RD1/4PS102JL
	R 528		RS1/8S221J
	R 529 803 807		RD1/4PS103JL
	R 533		RD1/4PS104JL
	R 534		RS1/8S222J
	R 535		RD1/4PS473JL
	R 551 552		RS1/10S102J
	R 553 554		RS1/10S473J
	R 555 556	(WG)	RS1/10S331J
	R 555 556	(EW ES)	RS1/10S471J
	R 557 558 559 560		RD1/4PS4R7JL
	R 601 602		RS1/10S473J
	R 603 604		RD1/4PS473JL
	R 605 606	(WG)	RS1/10S124J
	R 605 606	(EW ES)	RS1/10S104J
	R 608 610		RD1/4PS273JL
	R 612	(WG)	RD1/4PS223JL
	R 701	(WG)	RD1/4PS473JL
	R 702	(WG)	RD1/4PS222JL
	R 703 704	(WG)	RD1/4PS472JL
	R 705	(WG)	RD1/4PS273JL
	R 706 709	(WG)	RD1/4PS222JL
	R 707 708 714	(WG)	RD1/4PS104JL
	R 710	(WG)	RD1/4PS563JL
	R 711	(WG)	RD1/4PS333JL
	R 712	(WG)	RD1/4PS223JL
	R 713	(WG)	RD1/4PS473JL
	R 715	(WG)	RS1/8S221J
	R 716	(WG)	RD1/4PS102JL
	R 717	(WG)	RD1/4PS122JL
	R 718	(WG)	RS1/10S473J
	R 719	(WG)	RS1/10S393J
	R 801 805		RS1/10S103J
	R 806		RS1/10S331J
	R 808		RD1/4PS101JL
	R 809 823		RD1/4PS102JL
	R 810 812 819		RD1/4PS103JL
	R 811		RD1/4PS122JL
	R 813		RD1/4PS104JL
	R 814		RS1/8S102J
	R 815		RD1/4PS561JL
	R 816		RD1/4PS472JL
	R 817		RD1/4PS471JL
	R 818 821 822		RD1/4PS223JL
	R 820		RD1/4PS473JL
	R 824		RS1/8S473J
	R 827		RD1/4PS821JL
	R 829		RD1/4PS103JL
	R 830	(WG)	RS1/10S471J
	R 833 834		RS1/8S272J
	R 901		RS1/10S0R0J

CAPACITORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	C 201 209 223 228		CKSQYB103K50
	C 202 212		CKSQYB332K50
	C 203 215 216 219 226		CKSQYF473Z50
	C 204 208 210		CKSQYB223K50
	C 206 207		CCSQCH820J50
	C 211		CEA010M50
	C 213		CCSQCH470J50
	C 218		CEA2R2M35NPLL
	C 220		CCSQCH430J50
	C 221		CCSQCH100D50
	C 222		CSZA010K25
	C 224		CEA470M16LL
	C 225		CKSQYB333K25
	C 227		CEA4R7M35LL
	C 229		CEA470M16LL
	C 230		CEA220M6R3LL
	C 232		CCSQCH220J50

Unit Number :
Unit Name : FM UNIT

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
**	IC 51		LA1140B
**	IC 101		LA2110
**	IC 151		LA3430P
**	Q 1	Chip Transistor	2SA1162 (2SA1179)
**	Q 2	Chip Transistor	DTC124EK
**	Q 51	Chip Transistor	2SC2712 (2SD601)
**	Q 71	Chip Transistor	2SJ106
*	D 1 151		1S2473VH
	L 1 51	Inductor	LAU150K
	T 51	Coil	CTC1029
	CF 51 52	Ceramic Filter	CTF-182
	CR 101		CWW-107
	X 151	Ceramic Resonator	CSS1028 (CSS1022)
**	VR 1	Semi-fixed 10kΩ(B)	VRTB6VS103
**	VR 51	Semi-fixed 150kΩ(B)	VRTB6VS154
**	VR 152	Semi-fixed 15kΩ(B)	VRTB6VS153
		Front End Unit	CWB1032

RESISTORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	R 2 7 152		RS1/10S223J
	R 4 58 104		RS1/10S682J
	R 5		RS1/10S471J
	R 6		RS1/10S681J
	R 8		RS1/10S102J
	R 21		RS1/8S0R0J
	R 51		RS1/10S0R0J
	R 52		RS1/10S331J
	R 53 159		RS1/10S473J
	R 54		RS1/8S103J
	R 55 60		RS1/10S153J
	R 56		RS1/10S123J
	R 57		RS1/8S473J
	R 59		RD1/4PS183JL
	R 61 62 153		RS1/10S472J
	R 71		RS1/10S474J
	R 101		RS1/10S332J
	R 102		RS1/10S392J
	R 103		RS1/10S333J
	R 106 151		RS1/10S222J
	R 156 157	(WG EW)	RS1/10S332J
	R 156 157	(ES)	RS1/10S202J
	R 158		RS1/10S334J

CAPACITORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	C 1		CKSYB102K50
	C 2 3 101 102		CKSQYB103K25
	C 4 51 52 53 54 59 151		CKSQYF473Z50
	C 55 62		CCSQSL330J50
	C 56 63		CEAR47M50LS2
	C 57		CKSYF104Z25
	C 58 156		CEA010M50LS2
	C 60		CCSQSL101J50
	C 61		CEA4R7M16NPLL
	C 70		CCSQCH200J50
	C 103		CEA150M16LS
	C 104		CKSQYB182K50
	C 105		CEA470M16LS
	C 152		CKSQYB332K50
	C 153		CKSQYB223K25
	C 154		CKSQYB153K25
	C 155		CEA3R3M50LS
	C 157		CSZAR22M35
	C 158	(WG)	CCSQSL681J50
	C 159 160	(WG EW)	CKSYB183K25
	C 159 160	(ES)	CKSYB273K25
	C 161		CEA101M10LS

Unit Number :
Unit Name : Key Board Unit

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
*	D 901 902	LED	SLR-320DU3LM
*	D 903 904	LED(5090 Series)	SLR-320PG3KL
**	SW 901 902 903 904 905 906 907 908 909 910 912 913	Switch	CSG-253 (CSG1021)
**	SW 911	Switch(WG)	CSG-253 (CSG1021)
**	IL 901 902 903 904	Lamp 14V 40mA	CEL1025

Unit Number :
Unit Name : Switch P.C.Board

Mark	Circuit Symbol & No.	Part Name	Part No.
##	S 1 2	Switch(Mute & Motor)	ESN1001
##	S 3	Switch(Tape/Tuner)	HSK-126

Unit Number :
Unit Name : P.C.Board Unit

Mark	Circuit Symbol & No.	Part Name	Part No.
##	S 1	Switch(FWD/REV)	ESH1001

Miscellaneous Parts List

Mark	Circuit Symbol & No.	Part Name	Part No.
##	HD 1	Head	EPB1001
##	M 1	Motor Unit	EXA1013
##	B 501	Battery(5090SDK 5090B 5070QR 4090B 4090SDK 4090)	CEX1005 (CEX1008)